The Association of Special Libraries and Information Bureaux

Report of Proceedings

of the

FOURTEENTH CONFERENCE

held at

Gonville and Caius College, Cambridge

SEPTEMBER 24th to 27th, 1937

THE OBJECTS OF THE ASSOCIATION ARE: To examine, foster, and co-ordinate the activities of special libraries, information bureaux, and similar services; to act as a clearing-house for these services; to develop the usefulness and efficiency of special libraries and information bureaux under whatever titles they may function; and generally to promote, whether by conferences, meetings, or other means, the wider dissemination and the systematic use of published information.

The Association aims at assisting members who desire information of any kind to get into touch with the appropriate library or other body specialising on the subject; it does not itself attempt to build up any centralised organisation to provide the detailed information direct.

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The Association of Special Libraries and Information Bureaux

31, MUSEUM STREET, LONDON, W.C.1.

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106	B. D. Porritt, M.Sc., F.I.C., F.R.S.E.	Research Association of British Rubber Manufacturers.
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135	Captain A. C. Taylor, M.A.	The Newspaper Society.

136	Miss L. M. Taylor.	J. Walter Thompson Co., Ltd.
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144	Reginald W. M. Wright, F.R.S.A.	Victoria Art Gallery & Municipal Library.
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147	H. R. Marchant.	Monger & Marchant, Ltd.
148	Dr. H. Rosenberger.	Keesing's, Ltd.
149	H. Rottenburg.	
150	D. C. Johnson.	

* Unavoidably prevented from attending.

Editorial Note.

THE papers that follow constitute a record of the proceedings of the Fourteenth Conference of the Association. Written papers were, as a rule, prepared in advance by the speakers, and these have been reprinted in full. No verbatim reports of the discussions were made, but, with the aid of notes taken by the Stewards of the meetings and provided by the various contributors to the discussions, as full a report has been printed as the limitations of space permit. The editors take this opportunity to acknowledge their indebtedness to all those members of the Conference who have sent in notes of their contributions.

An index of the contents of the Report is printed at the end. Copies of the Reports of the thirteen previous Conferences are still available, and the fifth Report contains an index to the first five.

These Reports are indexed in the Industrial Arts Index of The H. W. Wilson Company, of New York.

31, Museum Street,
London, W.C.1.

Contents.

FRIDAY, September 24th. PAGE

RECEPTION OF DELEGATES by the President-Elect and Council of the Association 12

Chairman: MR. ARTHUR F. RIDLEY, F.L.A. (Chairman of Council).

Address by the President-Elect, SIR HARRY LINDSAY, K.C.I.E., C.B.E. (Director of the Imperial Institute).

The Inter-relation of Science, Agriculture and Industry 18

SATURDAY, September 25th.

Chairman: CAPTAIN A. C. TAYLOR, M.A. (Vice-President Newspaper Society: *Cambridge Daily News*).

Symposium on Newspaper Indexing.

Newspaper Indexing in the United States.
MISS MARIE-ANNE E. WALKER (Librarian of the *New York Times*) 31

Notes on Newspaper Indexing.
Librarian of *The Times* 39

Newspaper Indexing.
MR. JAMES J. EATON (Librarian of the *Yorkshire Post*) . . 42

Chairman: MR. J. G. CROWTHER.

Scientific and Technical Research in Soviet Russia.
MR. S. P. TURIN, D.Sc.(Econ.), (Lecturer at the University of London) 49

Chairman: MR. W. MACNAB.

The Extent to which Scientific and Technical Literature is covered by Present Abstracting and Indexing Periodicals.
DR. S. C. BRADFORD (Science Library, Science Museum) . 59

Chairman: MR. ARTHUR F. RIDLEY, F.L.A.

ANNUAL GENERAL MEETING 124

Report on the Year's Work of ASLIB . . . 13

PAGE

Reports on : 129

National Central Library.
British Society for International Bibliography.
International Committee of Universal Classification.
Union Française des Organismes de Documentation.
World Congress on Universal Documentation.
Deutscher Normenausschuss.
Bibliotheksausschuss of the Prussian State Library, etc.
Nederlandsch Instituut voor Documentatie en Registratuur.
Tekniska Litteratursallskapet, Sweden.

Chairman : Sir Harry Lindsay, K.C.I.E., C.B.E.

The Public Relations Officer.
Lieut.-Colonel E. T. Crutchley, C.B., C.M.G., C.B.E. (General Post Office) 72

SUNDAY, September 26th.

Chairman : Mr. J. G. Pearce, M.Sc., F.Inst.P., M.I.E.E. (Director and Secretary : British Cast Iron Research Association).

Technical Translating.
Mr. J. Edwin Holmstrom, B.Sc.(Eng.), Ph.D.(Econ.), Assoc.M.Inst.C.E. 83

Chairman : Professor R. S. Hutton, D.Sc., M.A.

Introductory Review by the Chairman . . . 96

The Uses of Microphotographic Processes in Documentation.
Mr. Watson Davis (Director, Science Service, Washington) 100

Notes on the Storage of Pamphlets and on the Preservation and Restoration of Books and Documents.
Mr. B. M. Headicar, F.L.A. 108

Chairman : Mr. Will Spens, C.B.E., LL.D. (Master of Corpus Christi College).

The Work of the British Council.
Lieut.-Colonel Charles Bridge, D.S.O., M.C. (Secretary-General, The British Council) 112

Final Session and Round-table Meeting . . 123

Accounts for the Year ended 30th June, 1937 . . . 127

Index 138

Reception and Opening Session.

By kind permission of DR. Z. BROOKE, the Librarian, delegates were able to visit the interesting Library of Gonville and Caius College before dinner on the Friday. Dr. Brooke himself could not be present, but the Assistant Librarian, MR. PAIGE, kindly acted as guide and displayed the very fine collection of early bindings. Delegates then gathered in the Junior Combination Room to meet the President-elect of the Association, SIR HARRY LINDSAY, and the Council.

After dinner, the Chairman of the Council, MR. ARTHUR F. RIDLEY, introduced the President-elect, SIR HARRY LINDSAY, who then delivered his Presidential Address on "The Inter-relation between Science, Industry and Agriculture." *

In proposing a vote of thanks to Sir Harry Lindsay for his interesting and stimulating Presidential Address, MR. C. S. ORWIN said that the interactions of agriculture, science and industry interested him particularly from the side of agriculture. The President had pointed out how agriculture stood at the foot of the scale of organised progress in human activity, and how every advance in technical and scientific knowledge seemed to react to the disadvantage of the primary producer. The conclusion to which he led them was that the world in which we live, with its anomalies of progress and poverty, of want and waste, calls for adjustments beyond the means of the individual, and that collective thought in terms of years must take the place of individual effort in terms of moments.

Conscious planning in this country had been applied to agriculture more than to any other industry, and the results, so far, had been rather disappointing. But they brought out the importance of having accurate information in every branch of science at every point on the road from producer to consumer. It was here that ASLIB could make its contribution. The President's address brought out most forcibly the need in social and industrial life to-day for an Information bureau such as ASLIB designs to be, both individually to each of its members and collectively through their association one with another.

The vote of thanks for the address was carried with acclamation.

* Printed in full on p. 18.

The Year's Work of ASLIB, 1936-37.
A Brief Survey.

The Thirteenth Annual Conference was held at Balliol College, Oxford, from September 18th to 21st, 1936. In spite of the unfortunate but unavoidable clash of dates with the Conference of the University and Research Section of the Library Association, the attendance was up to the average and the sessions were productive of much useful discussion. The Conference ended with a paper by Mr. John Grierson on "The Film in Industry" which, through the kindness of Mr. F. A. Hoare, of the Western Electric Company, Ltd., was illustrated by three interesting documentary films.

As was foreshadowed in the Report on the Year's Work last year, ASLIB has found it necessary to increase the office staff. The extra clerical assistance thus obtained enabled ASLIB to undertake those publishing enterprises which are mentioned later in this Report as well as to organise more effectively the steadily increasing routine work connected with the Enquiry Bureau and the Book Location and Borrowing Service. This step, though long overdue, has proved to be somewhat of a strain on ASLIB's limited financial resources, but it is confidently believed that it will prove to be beneficial in the long run.

The Council was sorry that the President, Dr. Cyril Norwood, felt it necessary to intimate that he could not contemplate a second year of office, owing to his impending absence on foreign travel. The Association has, however, been particularly fortunate in that it has secured the consent of Sir Harry Lindsay, K.C.I.E., C.B.E., Director of the Imperial Institute, to accept nomination as President for the forthcoming year.

The Association's Council and Committees.

The first meeting of the new Council, elected at the last Annual General Meeting, was held on November 2nd, 1936, when Mr. Arthur F. Ridley was re-elected to the Chair and Mr. H. H. Johnson was re-elected as Vice-Chairman. During the year the Council received with great regret the resignation of Mr. H. Vincent Garrett, of Messrs. Rowntree & Co., Ltd., who had served on the Council since 1924. For the remainder of the year his place was taken by Mr. Lloyd Owen, of the same company.

During the year seven meetings of the Council were held. Two new members, Mr. G. Ellis Flack and Mr. E. R. McColvin, were elected at the Annual General Meeting in September, 1936, and their valuable help is gratefully acknowledged. A full list of the personnel of the Council will be found on p. 4.

The Council appointed a Committee consisting of Dr. S. C. Bradford, Mr. R. Brightman, Miss B. M. Dent, Mr. J. J. Eaton, Mr. G. Ellis Flack, Mr. B. M. Headicar, Professor R. S. Hutton, Miss D. W. Hughes, Mrs. C. S. Orwin, Miss E. W. Parker, Mr. J. G. Pearce, and the honorary officers to make arrangements for the 1937 Conference.

Finance and Membership.

The audited Annual Accounts for the year ended June 30th, 1937, have been circulated to all members and will come before the Annual General Meeting for consideration.

The year ended with a balance in hand of £101 as compared with £39 last year. Unfortunately these figures would be misleading if it were not realised that £145 had been received by subscriptions paid in advance and that, in fact, the excess of expenditure over income for the year amounted to £69. This deficit, the first to occur since 1933, is disappointing but not wholly unexpected. The full force of the increased expenditure subsequent on the move to larger premises in March, 1936, was felt for the first time this year and, as reported above, it became necessary in November, 1936, to appoint a second assistant. Moreover a good deal of the increased office expenditure was due to the preparation and printing of certain of ASLIB's recent publications, the expenditure on which fell wholly within the year 1936–37, but which had only begun to sell during the last two or three weeks of that period. The value of the stock of publications is not shown in the accounts. It is expected that the discrepancy between income and expenditure will "even itself out" during the next twelve months, but the present position emphasises the disadvantages of the hand-to-mouth financial position of ASLIB, which means that there is no reserve upon which to draw when favourable circumstances indicate the desirability of a forward step in development which, though ultimately profitable, cannot bring an immediate return in cash. There are far too many projects, well within the scope of ASLIB, which must be put on one side because there is no reserve fund to finance them while in an immature state.

The number of members on June 30th, 1937, stood at 308, not including 160 non-member subscribers to the *ASLIB Book-List*. There were fewer resignations than in the preceding twelve months, but a much greater increase in the number of members is to be desired.

The "ASLIB Book-List."

(Quarterly recommendations of recently published scientific and technical books.)

Non-member subscribers now number 180 as against 151 at the same period last year. The increase in its circulation is rather more than these figures suggest since certain of the subscribers have become full members of the Association during the year.

The Council re-elected the following to act as Editing Committee for the *Book-List*: Dr. S. C. Bradford, Mr. B. C. Curling, Miss B. M. Dent, Miss Mizpah Gilbert, Professor R. S. Hutton, Dr. E. E. Lowe, Mr. A. F. Ridley, Mr. J. D. Stewart, and Mr. J. E. Walker. Continued thanks are due to the collaborators through whose generous co-operation the publication of the *Book-List* is possible.

"Classified List of Annuals and Year Books"

In response to suggestions received from users of the *ASLIB Book-List*, a selected list of annuals and year books published in English and dealing mainly with scientific and technical subjects

was compiled and issued as a supplementary publication to the *Book-List*. This sixteen-page pamphlet does not aim at being an exhaustive list of annual publications, but brings together, for convenience, those publications which are generally noted in the "D" sections of the quarterly *Book-List*.

"Select List of Standard British Scientific and Technical Books."

This publication was compiled at the request of the British Council in order to assist the latter in their efforts to make British scientific and technical books better known abroad. It has been distributed by them to the librarians of technical training institutions and specialist associations abroad and, in addition, ASLIB has sold many copies both in Great Britain and overseas.

The *List* should form a valuable check list for any librarian wishing to form a collection of books covering modern science and technology, although, from the nature of it, it cannot be of such direct value to the specialist in his own field.

The *List* does not pretend to be a complete bibliography. Agriculture and medicine were intentionally omitted. Further, it was stipulated that the *List* should not greatly exceed three hundred items, that the books should be those still in print, and that the authors should be British. These provisos made the choice of the items very difficult, but the method of compilation was the same in principle as that adopted for the *ASLIB Book-List*, i.e. the collated recommendations of specialists each advising on his own particular section. The work was carried through under the auspices of the *Book-List* Committee, the actual editing being undertaken by a sub-committee working under the direction of Mr. H. T. Pledge, of the Science Library, to whose services much gratitude is due. A Foreword was contributed by Sir William Bragg and an Introduction by Sir Richard Gregory.

The ASLIB Enquiry Bureau.

The use of this service increases steadily and the enquiries range over a wide field, literary, scientific, and commercial. Information obtained in pursuit of the answers to these enquiries is recorded in the central index, which has made satisfactory progress during the last year in spite of the fact that the adequate indexing of all the miscellaneous information passing through the ASLIB office could employ a whole-time worker specialising on that alone.

The Panel of Expert Translators.

The sub-committee appointed in 1935 continued its work of investigating the working of the Panel. Upon the evidence submitted to them the ASLIB Council expressed the opinion that the Panel still fulfilled a function not at present covered by any other organisation and that the information concerning specialist translators thus recorded was of such value that it would be a pity if the Panel were allowed to lapse. Nevertheless it was felt that extensive propaganda on behalf of the Panel could not be undertaken until the financial basis of its organisation had been made more efficient. Suggestions

for re-organisation have been drawn up and, upon the advice of the Council, have been submitted for the consideration of the ASLIB members. An opportunity for discussing these proposals will be given at the Round Table meeting which it is hoped to hold during the Conference in September.

"ASLIB Directory."

It has become abundantly evident that a new edition of the *ASLIB Directory* is the next enterprise towards which ASLIB's energies must be directed. Meetings of the Publications and Directories Committees have been held, and the Council have accepted their recommendations to the effect that during the coming twelve months as much time as possible shall be devoted by the office staff to the recording of new sources of information which have come into view since the 1928 edition of the *Directory*. Such work would be of immediate and permanent value to the Enquiry section of ASLIB'S work and would, in addition, provide the raw material from which the editor of the new edition of the *Directory* would have to draw. The Council hope that, by the end of that period, some plan may be found by which funds may be raised for the actual editing and printing of the new edition.

"ASLIB Information."

This continues as a medium for the interchange of information amongst the members of the Association. We have been fortunate this year in the receipt of review copies of several valuable publications, notices of which have appeared in the Bulletin. Our grateful thanks are due to those who have contributed articles and reviews to the periodical.

Information contained in early Newspapers.

In January, 1937, the Council appointed a sub-committee to report on a memorandum submitted to them dealing with the suggested formation of Newspaper Records Society, which should undertake the compilation of a finding-list and the systematic indexing and selective copying from newspapers published before 1800. The sub-committee—comprising Mr. T. Besterman, Mr. J. J. Eaton, Mr. B. M. Headicar, Mr. A. F. Ridley, Colonel Newcombe, and two co-opted members (Mr. J. W. Rattray and Mr. W. J. Paylor)—satisfied themselves that this particular field was not yet covered by any other organisation and that there existed a real need for the service. It was therefore decided, with the Council's approval, that an appeal should be made for funds to finance the scheme as a separate section of ASLIB's activities, distinct in organisation and finance though coming under the jurisdiction of the ASLIB Council. The appeal is under consideration by the organisation to which it was referred.

ASLIB and Classification.

The publication of the English edition of the *Universal Decimal Classification* continues and the second part to be printed, vol. i, fasc. 1, "Auxiliary Tables," was ready in the early part of 1937.

It is obtainable from Messrs. Simpkin Marshall, Ltd., at 5*s.* 0*d.* per copy.

This edition, which is based on the latest French and German editions, is being published under the auspices of the Joint Committee of ASLIB, and the British Society for International Bibliography, on which ASLIB is represented by Mr. H. H. Johnson, Mr. A. F. Ridley, and the Secretary.

London and Home Counties Branch of ASLIB.

Mr. H. H. Johnson, M.I.Mech.E., M.I.E.E., was re-elected Chairman of the Branch, and Miss M. Pears, A.L.A., was re-elected as Hon. Secretary. The session started with a joint meeting with the Library Association on October 21st, 1936, to discuss the proposals for the closer relation between Industry and the Public Libraries in the London area put forward by Miss E. W. Parker at the Twelfth Conference. The meeting was held at the Royal Institute of British Architects and the Chair was taken by the ASLIB President, Dr. Cyril Norwood. It was well attended, and the following resolution was passed :

> That this joint meeting of members of the Library Association (London and Home Counties Branch) and the Association of Special Libraries and Information Bureaux, having considered and discussed fully the public library services in the London area in relation to the needs of industry, technology and commerce, requests the Council of the two Associations to appoint a joint Committee, to explore the present position, to consider what further developments are possible and to report."

The ASLIB Council appointed Mr. Edward Carter, Miss E. W. Parker, and Mr. A. F. Ridley to serve as ASLIB representatives on this joint Committee, which met in May, 1937, at Chaucer House. Certain suggestions, circulated in memorandum form, are now under consideration.

On January 3rd, 1937, members of the London and Home Counties Branch of ASLIB visited the Imperial War Museum and by courtesy of the Librarian (Mr. H. Foster) were able to see over its very interesting Library. An invitation to attend a meeting of the Horological Institute was received in March, but, owing to particularly inclement weather, very few members were able to take advantage of it.

At the close of this summary of the year's work, the Council wishes to express its sincere thanks to Dr. Cyril Norwood, who retires after serving as President of the Association during the previous twelve months. His interest in the work of the Association has been much appreciated.

A. F. Ridley, *Chairman of Council.*
F. A. Hoare, *Hon. Secretary.*
E. M. R. Ditmas, *General Secretary.*

The Inter-relation of Science, Agriculture and Industry.

By SIR HARRY LINDSAY, K.C.I.E., C.B.E.

I must begin this address by admitting to a serious terminological inexactitude. Agriculture is, of course, the premier industry of the world, and to talk of "agriculture" and "industry" as if they were distinct is to expose oneself to a charge of unscientific terminology. Yet recent, and especially post-war, developments have led to the now generally accepted practice whereby the term "industry," when used without qualifications, is understood to connote manufacturing industry; and the fact that the reactions of agriculture and of the manufacturing industries to scientific method are normally quite different *inter se* lends point to the convenience of a comparison (however odious otherwise) between both forms of industry and to the convention whereby the latter term, when it stands by itself, is conveniently limited to manufactures. And just one more caveat. I hope I shall not be called too reactionary if my interpretation of Science is wide enough to include Economics, so unjustly described as the "gloomy" science, and is not limited to "exact" science such as mathematics, or to the "natural" sciences such as biology.

I propose to tackle my subject, the inter-relation of Science, Agriculture and Industry, from two different angles. Firstly, what are the outstanding differences between the objectives and methods of the agriculturist and the industrialist. They are both, of course, out for a profit, but do they follow different or similar paths in pursuing this end and, if different, what useful conclusions can we draw from their divergence? Secondly, what lessons can we learn from the application of science to agriculture and industry respectively, and can we usefully apply these lessons to the benefit of future generations? Here we pass from the domain of Science proper to what we may call, for want of a better title, the super-science of economic control.

To take first the problem of the inter-relation between the agriculturist and the industrialist, it is of course true that the interests of both travel a long way together. The prosperity of the agriculturist is to a large measure responsible for industrial profits, since the demand for manufactured goods comes in the main from the primary producer, either directly in his demand for food, clothing, housing, lighting and other necessaries of life, or indirectly from the merchants, brokers and transport workers who handle primary products and who are thus dependent on his efforts. But beyond this point the interests of the two seem to diverge, for the cheaper the products of agriculture the cheaper are, firstly, the raw materials of industry, and, secondly, the cost of living of the industrial worker. From this point of view the agriculturist's poison, in low prices of agricultural products, is the industrialist's meat. And yet if this conclusion is pushed too far the result can only be an impoverishment of agricultural interests which (as we have already seen) provide directly or indirectly the bulk of the demand for manufactured goods. So back we are again at the

position that the prosperity of the industrialist is closely dependent on that of the agriculturist. Over short periods the two sets of interests may diverge, but the farther they drift apart the stronger grow the impulses which tend to draw them together again, and it is the long-range view which must ultimately compose their fleeting differences.

Now let us look a little deeper below the surface of our problem. By what methods does the agriculturist count on a profit and how do these methods vary from those on which the industrialist relies for his profit? Here we come upon an interesting discovery. Quality apart, the prosperity of each individual farmer depends on the relation between the volume of his own crop and those of competing farmers. His prosperity is at its highest when he is able to produce a maximum yield whilst other competing crops are poor and prices are good; and vice versa his condition is worst when he can only produce a poor crop whilst competing crops are abundant and prices are low. In other words the agriculturist can show his skill in the crop he selects for cultivation and in the application of scientific methods. But, generally speaking, he is almost invariably out to secure the highest yield of which his land is capable; for by this means he reaps a large reward when prices are high and if they are low his losses are minimised.

How different is the position of the manufacturer, who is usually capable of adjusting output to demand and can often benefit either by mass-production methods on a rising market or by reducing output to meet a slump. It is true that the manufacturer, who has invested his capital in plant and machinery and often in training labour, is not usually capable of recovering and reinvesting his capital in some other kind of manufacture should markets go against him; whereas the agriculturist can usually vary his crops from year to year and often relies for a profit upon his skill in diagnosing and reconciling the fluctuating claims of climate, soil and markets. But, on the whole, we are not far wide of the mark if we admit that the manufacturer is better able than the agriculturist to adjust his output and methods quickly, so as either to benefit by increased demands or to shelter himself against reductions of demand. In other words, industry is more susceptible to scientific control than is agriculture; and this leads me to my second point, namely, what are the reasons underlying the different reactions of agriculture and industry, respectively, to the application of scientific method?

Many people would be content to answer this question briefly by replying that the reactions are different merely because the industrial field is different from the agricultural. (I have tried and tried to avoid this dreadful pun on the word "field"; the more I consider it the worse and yet the more inevitable is the *double entendre*). But I cannot help feeling that the ready answer suggested is not really satisfactory and I want to take you a little nearer the heart of the problem before us.

In the days of my youth I was delighted, in the course of a history lesson, to come across the following most engaging rhyme, which has stuck in my head ever since and which seems to me to illustrate very happily the importance of the application of scientific method to the affairs of everyday life:

When King Canute controlled the waves—
Or tried to, but he muffed it—
Had he but known, it seems to me,
The tide would turn at half-past three,
He really might have bluffed it!

Seriously, though, do not most of the differences in the application of scientific method to agriculture and to the manufacturing industries, respectively, really derive from the basic fact that the problems facing the agriculturist and the manufacturer are essentially different? The former is dealing with Nature and the growth of living organisms, the latter with the manipulation of inorganic or dead matter. The former can only bend Nature to his will by strict loyalty to her laws, while the latter is not hampered by any necessity to induce his raw materials to keep alive, for they are *a priori* dead. In other words, the agriculturist must take into account the fact that every one of the units with which he has to deal, whether they are potatoes or grains of corn or cattle; or apples if he is a horticulturist, or trees if he is a forester (for a forester is only an agriculturist with his head higher in the heavens and his feet firmer in the ground!); each of these units has its own living individuality with its own characteristics. He knows that, when he bulks them, the market will average them out and pay an average price for the lot, but his capacity to standardise them is limited; it may cover a single season but variations of climate and soil together not only may but almost certainly will cause variations of quality as well as output between one season and the next. Nor, indeed, is the agriculturist really a standardiser at heart for he knows that the real value of living material depends on its progressive improvement; improvement and degeneracy alike often depend on quite unexpected factors, and it is just the occurrence of the unexpected which militates against standardisation.

How different is the role of the manufacturer. Standardisation is the breath of his nostrils. He is, no less than the agriculturist, dependent more or less directly on products of the soil, whether animal, vegetable, or mineral, for his raw materials. But his raw materials are dead or dying. The less variation between his units *inter se,* the better he is pleased. If a particular grade of cotton or leather or timber fails him from one district he will comb the globe until he finds as exact a match as possible. Then and only then can he count on that degree of standardisation of the finished product on which he, and his customers, have set their hearts.

Now let us summarise the position we have reached. Agriculture consists in a series of efforts to coax Nature to produce what man requires. Each unit of produce has its own living individuality, or personality if you will, and personality rebels against standardisation. Industry, on the other hand, deals with dead products which it seeks to standardise, and its control over its own methods and markets is therefore effective. Indeed, we can go farther. We can almost classify the various forms of primary and industrial enterprise in groups, in an ascending scale based on their "controlability," if one may coin the phrase. First, at the bottom of the scale, comes the small farmer who must in self-defence (as we have already seen) produce the maximum of which his fields are capable, who cannot readily combine

with his competitors either to raise prices by reducing output or to force his surplus upon unwilling consumers, and who is thus least capable of exercising control over his products or markets. Next comes the large-scale farmer who is a little more favourably placed, for he is often able to reduce his costs by the application of scientific methods (better seed, better protection, mechanised apparatus, and so on) beyond the range of the small farmer. Yet his powers of "control" are also limited. In the third grade from the bottom we may place plantation and timber companies, also producing on a large scale, also dependent on the caprices of Nature and the seasons, yet capable of combining with competitors and of exercising definite control over production and of adjustments to fluctuating needs of the market. The examples of tea and rubber leap to the mind. Fourth, in this ascending scale of control, comes the minerals producer, who stands in a class by himself; for by delaying production he may manipulate his market and manœuvre it from congestion and low prices to short stocks and favourable prices. Moreover, by waiting he merely keeps his product in cold storage. It is there all the time and he can readily adjust production to demand whilst keeping his capital and reserves intact. Finally, at the top of the scale we must place the manufacturer, who is in the best position of all to control not only the speed and volume of his output but also (by standardisation) its quality and also (by mass production methods) the ratio of costs to market value.

Armed with this classification of the primary and manufacturing industries in an ascending scale of capacity to control or influence output and markets, let us look at the present world position. How have we reached it? Can we take a "line," so to speak, from past to present, and bravely project that line as our guide to probable further developments? Let us try.

You will all agree with me, I am sure, that the Great War gave a tremendous fillip to scientific discovery and particularly to the application of scientific method. It was so during the Napoleonic wars, and the hard times which followed them in England, culminating in the "hungry forties" of last century. The invention of the steam-engine, the spread of machinery, the displacement of labour and labour's revolt against the machine, all date from that period. Much the same sort of developments may be traced to the Great War of 1914–18 and the years of unemployment and unrest which followed.

The fact is that war must result in tearing up commerce and industry by the roots. Man-power must fight and the manufacturer must in those conditions concentrate on munitions and for these he must depend more and more on mechanised production. When peace conditions return, the whole structure of industry and commerce must be rebuilt. Names which had previously been known and respected for generations in the world of business have disappeared and new and untried names, whose real credit-values have still to be assessed, try to take their places. But credit is a plant of slow and delicate growth. Those of my audience who remember the slow and stately days of pre-war trade and industry remember the steady swing from excess to shortage of supplies, from slack to keen demands. Every swing of the pendulum in every branch of industry merely increased the momentum which eventually slowed down in face of

superior forces which pulled the pendulum back towards normal again. International indebtedness was liquidated in gold. International reputations were built up and commanded respect.

What was the real difference between those times and the times in which we live? Merely the fact that 1913 had behind it some half a century of peace, during which the principal wars which did break out were localised. As we stand to-day we have behind us over four years of the most intensive and extensive fighting the world has ever known, followed by currency complications, tariff complications, labour and social complications, taxation complications.

And, curiously enough, the rapid strides made in the domain of scientific discovery seem to be, for the moment, more of a hindrance than a help. This is, of course, an exaggeration. Nevertheless it does seem to be true that the immediate effects of scientific discovery on business relationships are disturbing though their ultimate effects are undoubtedly progressive and beneficial.

Let us take a fairly obvious example. One result of the wireless telegraph and telephone is that our knowledge of events in the most distant parts of the globe is now both rapid and accurate. You might imagine that this amazingly increased knowledge, in the world of commerce, was all pure gain. The progress of crops, discoveries of minerals, the course of prices all over the world, are known at once in every market of any consequence where such knowledge is worth the comparatively small cost of a wireless message. But the actual and immediate results are only too often disturbing. What happened in the old days when knowledge of new business developments at home and abroad was difficult to get and very highly valued when it was obtained? It was the business man with the first-hand reliable information who benefited. Whether he was manufacturer, distributor, broker, importer, exporter, or retailer, he took advantage of his superior information to lay in stocks when a shortage threatened and prices were likely to rise, or to unload his stocks when he had first news of an approaching glut. What was the result? All business men, throughout the chain from the primary producer of the raw materials, through the exporter and importer to the manufacturer and out again through the exporter of the finished goods to the final importer, distributor and consumer—each one of these links in the whole complicated chain was a potential holder of stocks. In the days of which I am speaking the stocks both of raw materials and of finished goods were so scattered that they were invisible, for they were held by numerous wholesale and retail interests throughout each industry.

Nowadays the picture is very different. Just because trade information is so wide-spread and so accurate, the chance of getting "one up" on your nearest rival by means of quicker and more accurate information is very remote. Too many fingers have been burnt by the extension into post-war days of pre-war methods of building up stock for a rise of prices which never came. No, we have had to change our methods completely and the new technique consists in avoiding any unnecessary sinking of capital in stock; with the result that the retailer only buys his stock of, say, tea, coffee, sugar, biscuits, or jam for his immediate requirements; and of course in the case of perishables like butter or fruit this tendency to avoid stock-holding is intensified. But the wholesale merchant also revises his methods. He gets to

know the retailer's probable requirements from month to month, from season to season, and he regulates his incoming supplies accordingly. And so back along the chain of production and distribution. The manufacturer only buys his raw materials in quantities to be delivered as he requires them. And so finally we come to the first or primary producer who is left to " carry the baby."

I am convinced that the huge stocks of primary products such as wheat, cotton, rubber, tin, tea, sugar, and the like, amounting often to a year's or eighteen months' supply or even more, so distinctive a feature of post-war commerce, had always existed as part of the world's stock-in-trade. The only difference is that in pre-war days the stocks were so spread that they were invisible and their effect was therefore unrealised. Nowadays they appear colossal. I believe that the world's merchants are slowly coming to realise that even twelve months' supply of a non-perishable commodity is nothing extraordinary and that without some such reserve conditions might quickly develop into a shortage.

Now let me turn once more to the relative positions of the agriculturist and the industrialist. I have tried to show that the latter is better able, on the whole, to apply scientific discovery to his production than the former, and better able to control his markets scientifically. It was this disparity between the two, no less than the throwing back of stocks on to the primary producer, which accounted for the many post-war years of disparity between the prices of agricultural produce and those of manufactured goods.

Unfortunately it is very difficult to quote published statistics to show that the prices of agricultural produce may during post-war years have been low compared to those of manufactured goods. But that was certainly the contention of most delegates to the International Economic Conference which met at Geneva in 1927, and it was never seriously controverted. And certain statistics are available which may be quoted in support of this theory ; they are published by the Department of Statistics of the Government of India. Since the bulk of India's exports consist of raw materials, chiefly agricultural, and the bulk of her imports consist of manufactured goods, statistics of fluctuations in the prices of Indian imports and exports respectively, based on a pre-war average, will show how they stood to each other in comparison with pre-war days. Taking the July, 1914, prices as a fair indication of normal balanced relations between the agriculturist and the manufacturer, and giving each a value of 100, we find that by 1929, the year preceding the great slump which drove England off the gold standard, the prices of Indian exports—chiefly primary products—were represented by an index-number of 123 (i.e. 23% over pre-war), while those of Indian imports—chiefly manufactures—were as high as 143, or 43% over pre-war. Then came the slump of 1930, when the respective index-numbers fell to 85 and 125 ; in other words, while the primary products were valued at 15% below pre-war prices the manufactures were still 25% over pre-war, and thus it took $1\frac{1}{2}$ units of primary produce to purchase the quantity of manufactures which could be bought against one unit in pre-war days. But there was worse to follow. By 1932 the bottom of the slump had been reached. The index-numbers stood at 69 and 115 respectively, which meant that in that year it took $1\frac{2}{3}$ units of grain or other primary

products to buy the quantity of manufactures which could have been purchased pre-war against only one unit of primary products. That was a serious state of affairs for the primary producer and no wonder his demand for manufactured goods slackened off. Luckily for him prices took a better turn. The pendulum swung in his favour, for the prices of his products appreciated while the prices of manufactured goods fell. The margin between the two sets of index-numbers contracted until in 1935, the last year for which this series has been calculated, the two figures stood at 85 and 109. That is to say, he could buy a pre-war unit of manufactures with $1\frac{1}{4}$ units of primary products instead of having to hand over $1\frac{1}{2}$, as in 1929, or $1\frac{2}{3}$, as in 1932. During 1936 the tendency probably moved still farther in favour of the primary producer, who is now apparently back on his pre-war footing *vis-à-vis* the manufacturer. But he had undoubtedly passed through a very serious crisis during the six years 1929 to 1935. Confirmation of this account of the relationship between the manufacturer and the primary producer during these years may be found in parallel United Kingdom price statistics quoted by Professor Pigou and Mr. Colin Clark in the " Economic Position of Great Britain—London and Cambridge Economic Services," June, 1936. One would never expect to see quite such a swing-over of relative prices in favour of the agriculturist and against the manufacturer, for the reason that as soon as prices go against the manufacturer his demands of raw materials at once slacken and so the equilibrium is more quickly restored in the manufacturer's favour than in favour of the agriculturist. The most one can say is that slowly, and over long periods, the prices of manufactured goods adjust themselves to the needs of the primary producers ; and the evidence of such adjustment may be found in a slow rise of the general standard of living.

One might have imagined that scientific discovery and invention would have produced rapid results in the reduction of costs of manufacture and consequently of the prices of manufactured goods. And if man in general were content to sit back and to be satisfied with what he has, that would of course be the result. But it is not so, for man's needs expand as civilisation progresses. One might have thought, for example, that the zipp fastener would have solved the problem of clothing. One tug from waist to neck, another tug round the waist, and there you are, clothed for the day ! But in actual fact man does not progress from greater to greater simplicity, but exactly in the opposite direction, from greater to greater complexity. Why ? Because there enters into his daily needs the mysterious element of quality.

This question of Quality is important and I should like to dwell on it for a little. It is important, for example, to remember that the application of science to industry may be directed not merely towards reductions of cost, but just as often towards improvements of quality. It is true that the element of cost can never be wholly absent from our calculations, but it is quite common to find that the public will pay more for a better article—not merely or necessarily for a more durable article but for one which may be in quite other respects more satisfying. And thus we see the parallel development of two contradictory tendencies, both arising from the application of scientific discovery, the

one operating in favour of lower and lower costs of production and the other in favour of better and better results, even at higher cost.

This rivalry between grade factors and price factors, or shall we say between Qualities and Quantities, is interesting to watch. It has always existed, ever since man became an economic animal. But it has acquired special prominence and point since the advent of the machine and the rapid strides in scientific discovery which have occurred during the past century, and particularly during the past half-century. That " divine discontent " (if we are right in calling it so) which urges man to improve his standard of living sharpens the demands for quality goods. The luxuries of one generation become the necessities of the next. The result has been twofold. Firstly, the handicraftsman could not meet all demands and was gradually supplanted by the machine ; and, secondly, the demand for raw materials led to high prices, which encouraged the development of cheaper and often inferior substitutes.

Of course nationalism, high tariffs and the political objective of self-sufficiency have intensified these developments. Local raw materials are encouraged at the expense of better and cheaper but exotic materials. I wish, however, to avoid in this paper any argument which savours of the political (and too often uneconomic) and to keep well within the bounds of normal human and economic development.

Let me give one or two practical examples of the sort of developments which I have in mind. Two outstanding examples which may conveniently be studied together are those of natural indigo and natural lac-dye—the former a vegetable product and the latter an animal product better known under its commercial name of crimson " lake."

Both were subjected to the pressure of inflated demands arising from the rapid progress of mechanised textile manufacture. The result was that the prices of both products, and especially of indigo, soared to an extent which encouraged competitive aniline dyes. Natural indigo still lingers in response to the conservative demands of Persian and Turkish carpet manufacturers, but how fallen from its once high estate ! Lac-dye is no longer in use, for commercial interest has shifted to the resinous substance known as lac, once a by-product but now the staple commodity.

The case of lac itself may be quoted. Here again world demands for lac and shellac increased beyond the capacity of India's natural rate of production. Prices soared and once again the synthetic competitor stepped in, not so much to oust the natural product as to supplement and drive it into uses in which its natural superiority maintains its pride of place.

I have cited one example, indigo, from the vegetable world and one example, lac, from the animal world. Let me quote one, now, from the world of minerals. One might have imagined that the terms natural and synthetic are hardly applicable to minerals, but it is not so. Take, for example, the manufacture of synthetic building stone, or Portland cement concrete, in its competition with natural building stone. There is a double synthesis here. The material is arrived at by a combination of Portland cement, sand and gravel, whilst the

Portland cement itself is prepared from a standardised mixture of clay and chalk, and is thus a synthetic and superior substitute for natural cement which was originally made from impure limestone. Wheels within wheels ! One synthesis within another ! In the result, Portland cement concrete may be used either as ordinary building stone, or else may be used *in situ* just as concrete is used. So far as the building stone is concerned, the synthetic stone is cheaper, stronger and more durable than some " natural " building stones ; and although the æsthetic value of the natural stone may be superior, the use of the synthetic is undoubtedly spreading.

One or two other points in connection with the mineral industry may be of interest. Consider, for example, the steel industry, which is of such importance that a fourth category—fourth only from a chronological point of view—is now necessary in the classification of the ages into those of stone, bronze, and iron. The steel industry is developing in at least two directions. On one side we find efforts directed towards the reduction of the cost of manufacture of ordinary steel and the standardisation of the product, and on the other we find incessant endeavour to improve the quality of steel, to overcome its defects, and to introduce new and important properties. On this side we have the misnamed " stainless " steels. There are some temptations to which a man of stainless character may be specially susceptible, but a true stainless steel should be unstainable in all circumstances ! Some of these stainless steels, by the way, are only called " steel " as a matter of convention or convenience as they may contain little or no iron.

A consideration of these two classes of steel gives a very interesting example of the different ways in which one industry may react upon another. Ordinary steel is liable to rust and corrode, and a whole industry has been built up solely to produce protective coatings to prevent this action, particularly in steel used for structural purposes. The essential property of stainless steels, however, is that they should resist corrosion and require no protective coating. In the steel industry, therefore, we have one branch which walks hand in hand with the paint trade and welcomes its help, and another in which rusting and corrosion is a fundamental defect, and to require the help of the paint maker would be an admission of failure. However, this is a digression and I must return to my main theme.

I mentioned a few sentences back the influence of textile developments on the demand for natural dyes and their gradual displacement by synthetic dyes. With regard to textile materials themselves, the natural fibres still predominate—cotton, flax, wool, hemp, and so on. But artificial silk, while not displacing either these or natural silk, has won a secure place for itself in view of its easy susceptibility to standardisation and its reasonable price. Many other examples could be quoted of natural products which have either succumbed to the competition of the synthetic substitute or coexist with it on terms of armed neutrality : perfumes, drugs, plastics, leathers, oils, fats ; from each of these industries can be quoted instances of competition between natural and synthetic products. I do not quote the cases of butter versus margarine, or cane-sugar versus beet-sugar, for here the competitor is just as " natural " as the original product, though perhaps not so aptly prepared by Nature for human use and requiring

a higher degree of mechanical treatment or processing before it can be used.

From this brief survey of the struggle between the natural and the synthetic two important conclusions emerge. Firstly, from the point of view of quality the natural product is usually the better of the two. Where the natural product fails is in its resistance to standardisation or in its failure to respond to increased demands, or in both. There are limits to the conditions of climate and soil in which indigo can be successfully grown. Lac is more or less of a jungle product and its cultivation on an intensive scale, capable of extension, is limited. But quality for quality lac cannot be beaten in combining adaptability of form with its natural insulating properties. So also the quality of natural silk is likely to keep it long in popular favour in spite of the comparative cheapness of rayon. For the future, it does not seem likely that either the natural or the synthetic type will ever win complete victory over the other. It seems likely that mankind will rely more and more in future on such skilful mixtures and combinations of the natural and the synthetic as will preserve the best elements of both. Secondly, in the domain of food and drink, the natural products still hold their own. Sugar is not seriously threatened by the competition of saccharine. Chemicals are certainly found to a fairly large extent in beverages, in flavouring essences and in drugs ; but recent legislation on preservatives has restricted their use. On the whole mankind prefers his food and drink in forms as intimately derived as possible from the living animal or vegetable ; and health considerations will probably keep him closely to the natural and will increasingly exclude the synthetic from his diet—another example of " quality " in nature and in natural products.

This brings me to an important stage of my argument. Enormous strides have been made during the past quarter of a century—and it is difficult, sometimes, to realise that nearly a quarter of a century has passed since the outbreak of the Great War—in the conversion of waste products with the aid of Science to economic use. Many industries depend nowadays for their profit on their capacity either to use or to sell their waste products. The result has been an all-round cheapening of production and a *de facto* raising of the standard of living. But one set of charges remains obstinately high, relatively to the rest, and that is the cost of transport. This factor, combined with the comparative poverty of the agriculturist, has checked what might otherwise have been a normal expansion in the application of manure, i.e. in the restoration of waste products to the soil. In many countries it is more profitable to use animal waste such as cattle-bone for the manufacture of industrial products like glue rather than for the improvement of agriculture. But it is not unlikely that future generations may blame us for wasting, in the form of glue, products which (themselves waste products) had a potentially higher value as manures. In other words, are we right in assuming that the short-range dictatorship of day-to-day monetary values provides a correct basis for long-range economic policy ?

I hope you will not think that I have spent too many words and wasted too much of your time in arriving at the last and deepest question which I now put to you. It seems to me to be a question which demands clear thinking and right judgment. It demands, for

its answer, an application of the super-science of Control for the Future. Briefly stated: Are we right in assuming as we tacitly do, every moment of every day, that profit-making is the soundest principle on which to build our economic policy?

In the past we have evolved, with no little success, a *laissez-faire* policy whereby the individual was trusted to contribute his effort towards national and even international economic life. In other words, just as the span of a year or a century is laboriously built up from seconds, minutes, and hours, so was national and international life built on the efforts of the individual and family. But were we right? Has not the enormous expansion of legislation during the past few years indicated an anxiety to build up long-range policies in which the year or even the century is a better unit than the day or week; and national benefit of more account than individual profit?

This is a fascinating subject and one which I cannot possibly discuss in detail. But I do hazard the following suggestions, merely lines or threads of thought which some of you may think worth while following out for yourselves.

I begin from the assumption that the economic troubles (with political troubles in their train) through which we are passing to-day are largely derived from the ravages of the Great War, which ploughed up old and tried commercial connections, destroyed old and valued commercial reputations and, in short, threw all trade, international and even to some extent national trade and industry, into the melting-pot. We are just emerging, but emergence is a slow and painful business because trade is based on credit and credit is based on confidence and confidence is entirely a question of reliability—the reliability of the individual trader and the reliability of the trading nation. Is X as good as his word? That is the fundamental question. He may wish to be as good as his word; and I fancy that "honesty is the best policy" is a principle as widely recognised to-day as ever before—probably more widely than ever before. But the trouble is that X may fail to keep his word, not through any dishonesty, but because circumstances are too much for him—for example, action by his own or another State, or the failure of other traders whom he himself had trusted.

Look back on the good old, bad old, pre-war days—the slow steady development of trade and industry, the inevitability of the laws of demand and supply. We have lost a lot of the inevitability of the economic laws of those days. There were fewer exceptions then than there are now. Effects then followed much more precisely on causes than they seem to now. We are nowadays groping and fumbling where pre-war we walked with confidence.

I hope that most of my audience will accept this as a statement of fact. Each of you would probably explain it differently, for himself. To my mind the important thing to remember is that nowadays we are evolving a new technique. We have not nearly mastered it—we cannot even yet realise more than vaguely what its implications are. But it seems to me to lie in the direction of Conscious Control of Economic Life. In the past, the economic life of the human race was something instinctive, almost automatic. Human wants led to material supplies; the exchanges operated instinctively on a gold or silver basis; tariffs were low, trade was largely free; the system ran itself.

Now, all lies in dispute: Why ? Because economic man has passed from an instinctive animal to the stage of a rational, thinking, and therefore questioning being. The needs of the day, and the satisfaction of those needs, are not enough. His economic policy calls for long-range rather than short-range solutions. Is it enough to meet soil-erosion problems by the simple solution of moving to less eroded tracts ? Is the current price for timber, offset against the costs of destruction and transport of the forest, to be the controlling factor in forestry ? Is large-scale agriculture likely to result in the conservation and improvement of soil fertility ? Is nutrition to be based on instinct or on reason ? In other words, is it safe to allow the individual, uncontrolled, to build up through herd methods the structure of national and even international policy ? Is it not wisest to leave to him the manufacture of the bricks, but to take from him the placing of them when they are made ? Surely the placing of the bricks and the shaping of the structure demand collective thought and should not be left to individual effort, however well-intentioned. In other words, if profit is to continue as the mainspring of individual human activity, should it not be subject to the interests of the race and of humanity, in terms of years rather than of moments ?

There I will leave the problem with you. So far as it is open to individualistic solution, it can only be correctly solved by individuals each capable of putting his neighbours' interests before his own. So far as it is open to collective solution, it must be by communities uniting to recognise that the individual is the only true unit and that his needs, physical, mental, and spiritual, are paramount. We have left behind us for good the worst features of the old *laissez-faire* system which treated human labour as a commodity and left human wages to be dictated by the ordinary laws of demand and supply. We are advancing to a new technique whereby instinct is superseded by conscious constructive control. It is an uncomfortable transition-time ; but what age was ever more than a transition-age ? For surely what we are can never be nearly so important as what we are to be.

Some of my audience may perhaps be moved to ask " What has the interrelation of Science, Agriculture and Industry got to do with ASLIB ? " Well, my answer is a simple one. We are all interested in Information Bureaux and a bureau of this kind is, of course, not an end in itself but a means to an end. It is, so to speak, a key which can be used to unlock a door and through that door you can obtain a view, wide or narrow, deep or shallow, according to the size and outlook of the door which the bureau is qualified to unlock.

Now I can only speak for one bureau of the kind which interests ASLIB, and that is the Information Bureau which we maintain at the Imperial Institute. We do not call it an Information Bureau, but that is its function. Its archives contain not only records of all important investigations which have been conducted at the Imperial Institute during the fifty years of its existence, into the raw materials of the Empire, but also references to important articles in technical journals and periodicals in many languages bearing on this wide subject. And, in addition, we have a valuable reference library of technical books. I have tried, in this address, to draw together, in a more or less concentrated form, the conclusions which seem to stand out from the general trend of the enquiries received at the Institute from all

parts of the Empire, particularly since the War; from the investigations carried out; and from the reports and advice given to our enquirers. And it seems to me that an Information Bureau is a sort of dual-purpose machine. It is available not only for the purpose of tabulating all the experience which can be brought to bear on the complex character of any single problem of Empire raw materials, animal, vegetable, or mineral, which may be brought to our notice. It is also available for what may be called long-range work; that is to say, to supply the data from which the student of Empire economics may draw by induction the general conclusions which may help him in his survey. The one method is the deductive method—how to apply past experience to answer present-day questions—in other words, how to use the microscope for the solution of individual problems. The other method is exactly the converse—how to apply a telescope to broad tendencies and so by induction to try to extend the range and to guess, with as much probability as circumstances and data allow, the future trend of present-day developments. Both microscope and telescope are equally useful, to serve different needs; and both must alike depend, for their success, on the scope and method of the bureau concerned. It is precisely the scope and method of information bureaux and libraries which is the special concern of your Association, and from this point of view the work of your Association is of inestimable value to scientific progress.

Newspaper Indexing in the United States.

By MARIE-ANNE E. WALKER,
Librarian of "The New York Times."

To the average reader nothing is as dead as yesterday's newspaper. He is interested only in what is happening today and what probably will happen tomorrow, but there is a large and growing class of serious and inquisitive readers who regard the newspaper as a daily and living history of contemporary events. As such it is a document to be carefully preserved and referred to not only in the present but more particularly in the future when the historian turns back to look at the record. That it constitutes source material of extraordinary value we, as librarians, have long since recognized. We have had very recent proof of this in the preparation of the *Dictionary of American Biography* which was completed during the past year. The writers of the various articles and the editor himself frequently stated that the newspaper had been an indispensable source of facts. More than that: on many occasions it was the only source in existence.

Our work as librarians consists not only in the actual preservation of the newspaper itself which revolves around such problems as rag paper editions, photostatic copies of actual size or in miniature and the microphotographic copy but also in the location of the files of newspapers available for reference and the convenient presentation of all the facts and ramified material sought after by the users of our files.

As far as the preservation of the newspaper itself is concerned, may I say here in passing that *The New York Times* has come to the conclusion that, for the present at least, the most satisfactory record for the preservation of the newspaper for posterity is indeed the rag paper edition. We are still open to suggestion, however, if anything more satisfactory presents itself whether it be the microphotographic copy or any other form of indestructible recording.

However, we are not here to discuss the actual preservation of the newspaper but to study the work that has been done in the United States to make the files of newspapers available to those who wish to consult them, and to collate the information contained in the newspaper itself. This work, I should say, naturally falls into three distinct classifications: those publications which give the names of places and libraries where newspapers may be consulted throughout the country; those which give a list of the newspapers filed in any one locality; and, lastly, those publications which index the actual contents of any one paper, or more, either for the use of members of the staff or for the use of the public at large in indexed or published form.

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In a country as vast as the United States it is no negligible expense to travel in search of material. Newspaper files are scattered all over the country in newspaper offices, in court-houses, in historical societies, in private and public libraries, large and small, and it is

no easy matter to find them. Perhaps that is why so many " location lists " have been published.

Who would ever think of looking in the State Historical Society of Wisconsin in the North for the earliest known copy of a rare New Orleans French paper published in the South? Yet that is where it is to be found. To obviate some of these difficulties Dr. Clarence Saunders Brigham began his compilation of the " Bibliography of American Newspapers, 1690–1820 " which was published in the *Proceedings of the American Antiquarian Society from* 1913 *to* 1928. He gave the location of each file and something of its history. This was a great boon to scholars and others who were seeking information, it constituted an excellent beginning in the right direction, and prepared the way for *American Newspapers,* 1821–1936, *A Union List of Files available in the United States and Canada,* which was recently published by the H. W. Wilson Company under the auspices of the Bibliographical Society of America. This volume is unique and has earned for all who contributed to its publication the eternal gratitude of all students of research.

A committee was organized which numbered among its members such eminent librarians as Dr. James Thayer Gerould of Princeton, Dr. Harry Miller Lydenberg of the New York Public Library, and Dr. Henry Spaulding Parsons. Miss Winifred Gregory was selected to do the editing. She acquitted herself honorably indeed in the performance of her task which has given to the craft a tool of limitless value.

This Union List presents a geographical arrangement by state or province and city in which the file is available for research. It was inevitable that some historical facts be included to insure accuracy of dates, which only adds to the value of an already valuable work. Such publications as those of fraternal lodges, labor unions, religious denominations, etc. which appeal only to smaller groups have not been included, but are being held for later editions of other Union Lists of Serials.

The appendix contains an excellent " Bibliography of Union Lists of Newspapers " which was compiled by Karl Brown and Daniel C. Haskell of the New York Public Library which is, to date, the most complete list of its kind as it brings together a record of earlier and similar lists and such location lists as are perhaps not included in the Union List itself of foreign, private, and smaller American collections. Of these there is the bibliography already referred to by Dr. Saunders and such other valuable contributions as " American Newspapers of the Eighteenth Century," " Checklist of Boston Newspapers of the Civil War," " Bibliography of French Newspapers and Periodicals in Louisiana," " A Bibliography of Nevada Newspapers," " A Checklist of Upper Canada Newspapers," and some foreign lists from Austria, Germany, Great Britain, Italy, etc. I mention a few of these only to give you an idea of some of the indexing that has been done in the United States.

In the appendix to the Union List of Newspapers is added, " Notes on Newspapers Published in Foreign Countries Found in the Libraries of the United States and Canada " as well as a list of " Miscellaneous Collections " of newspapers in various libraries. It is unfortunate that no index of titles was included in this otherwise most valuable work.

Somewhat different in its scope though it is an index which falls into this second group is that published by the *Iowa Journal of History and Politics* and includes a list of " Some Recent Historical Items in Iowa Newspapers." There is excellent material here which paves the way to the publication of other such lists.

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The actual indexing of the newspaper itself is a problem which each newspaper has solved according to the needs of the members of their staff or the demands of the public they serve. We are not going to discuss the libraries maintained by every newspaper of any size or importance in the country, but the actual problem of indexing which has emerged from the newspaper library.

The Times of London long ago recognized the importance of newspaper material as a matter of record and the publication of its contents in an index which dates back to 1790. In the United States the earliest known index is that of *The New York Herald* which began listing its published items as far back as 1835 when *The Herald* was first issued. The first volumes were written in longhand, in large ledgers and later in loose-leaf books. *The New York Times* also kept an early handwritten index beginning with the first issue in 1851 and running through 1858. Whatever index we may have had for 1859 has been lost, but the one published in 1860 and consisting of only two pages is the first published index to a newspaper in the United States. It was issued continuously till 1905 when it was suspended until 1913 when the present *New York Times* Index was begun. This is now the only newspaper index published in the United States covering the general news of the world.

The New York Herald Index is a valuable record of the period from 1835 to 1920. It was begun in 1860 by one of the first newspaper librarians, Mr. Robert Bligh, and comprises 1,742 volumes. As we have already said, it is written entirely in longhand with the exception of the period from 1908 to 1920 when it was typewritten and four carbon copies made. Five copies also were typewritten by Mr. Maurice L. Symonds, when he was librarian of *The New York Herald,* of that portion of the early index covering the years from 1835 to 1908. These, however, included only the letters from A to C. The sale of *The Herald* in 1920 put an end to this project and the index itself was discontinued.

Both these typewritten indexes are available for reference in the office of the Paris edition of *The New York Herald, The New York Sun, The New York Herald Tribune,* and one copy has been placed in the vaults of the Guaranty Trust Company for safe keeping. The one complete file, handwritten and typewritten, is owned by *The New York World Telegram* and prized very highly.

Perhaps we should say here that this index is more encyclopedic than an index usually is. Its material is classified under such large and simple headings as Congress, Legislature, Fights (instead of boxing matches), and there are no sub-headings. Mr. Matthew Redding, the librarian of *The New York World Telegram*, tells me that this index is used a great deal more than it should be to insure its preservation.

There is also in the office of *The World Telegram* an index to the

contents of *The New York World* which should not be overlooked even though it is on galleys, is incomplete and not in altogether usable form.

The New York Tribune began to publish an index in 1875 under the direction of Mr. W. L. McPherson, who carried it back to the first issue of the paper in 1841. This index, which was suspended in 1906, was issued in nine volumes. A number of copies are available for reference and are very useful indeed.

The New York Evening Post published an annual index of its editorials from 1907 to 1917. Prior to that time *The Post* used a handwritten index which collated material as far back as 1875 and continued through 1920. A loose-leaf index was begun in 1925 and bound annually. When *The Post* was sold to its present owners this handwritten index was discontinued. *The Chicago Tribune,* I understand, has a similar record. *The Brooklyn Daily Eagle* issued a printed index which covered the period from 1891 to 1902. All these published indexes are of inestimable value as reference tools. Only a limited number of copies are available and whoever is fortunate to own one may well be proud of their possession.

The years 1905 and 1906 proved an unfortunate period for newspaper indexing in the United States. *The New York Times* Index suspended publication and *The New York Tribune* Index followed in its footsteps. Various attempts were made to index the news but none of them survived. Librarians everywhere were happy when, in 1913, *The New York Times* Index resumed publication as a quarterly. In 1930 it began to appear monthly and was cumulated quarterly and annually, which greatly increased its usefulness. Now it is no longer cumulated quarterly but annually.

The New York Times Index is one of the publications which have not lost in volume during the depression. Year after year, from 1930 to 1936, the annual volume has grown to such proportions that the current issue, for 1936, may justly be said to be too cumbersome for convenience. It is a book of 3,356 pages with exterior dimensions $9\frac{3}{4}$ inches long and $6\frac{1}{2}$ inches wide. Perhaps these huge proportions were due to an excess of zeal for indexing on our part, or perhaps, in truth, the news has been of much greater volume than in years past. Whatever be the reason for the gradual increase in size, a real effort is being made at the present time to cut down the index as much as is possible without affecting its usefulness and interest. The monthly volumes already indicate a perceptible change.

The New York Times Index was originally planned and edited by Miss Jennie Welland, who is now with the Library of Congress. The present editor is Miss Mary Baer. It was realized from the beginning that the Index would of necessity have a circumscribed circulation and there has never been any intention that it should become a profit-making enterprise. The primary thought back of its existence has been that it should constitute a printed record of all the news, editorial and feature material included in the daily and Sunday issues of *The New York Times* and in this way provide a valuable service for those seeking information on the immense range of subjects covered by a modern newspaper. The fact that its subscription list includes colleges, libraries, etc. throughout the world proves that the idea has been justified.

The late Mr. Adolph S. Ochs, publisher of *The New York Times* from 1896 until his death in 1935, took great pride in the fact that *The New York Times* Index was a key to the history of the momentous times in which we live and would at a future time be considered an indispensable tool for the scholar. Any expense to further that cherished hope was incurred with generosity.

I feel that I must stop here to give you the answers to the many questions we are so frequently asked about the Index. I believe they will interest you.

The staff of *The New York Times* Index comprises an editor, an assistant editor, two editorial assistants, twelve full-time indexers—all of whom are trained people—and two file clerks. The file clerks mark the date, page, and column on each article of the rag paper edition to be indexed. Then they cut, mark, and distribute these articles according to the list of subject headings assigned to each indexer. She in turn indexes the news stories according to author, title, and subject on cards. These cards are inserted in a preliminary file which is later edited. The work of revision and collating for the annual cumulation continues throughout the year.

The New York Times Index concerns itself with events in the Metropolitan area, in the Nation and in the world at large as does *The Times* itself and, in this sense, it is a key to all the news of the world as published in *The New York Times.*

The United States Daily, a newspaper established in 1926 to report the government's activities, issued an index to its news until publication was suspended in 1933. Miss Adelaide Haasse, now Research Consultant of the Works Progress Administration, was the editor. It is a valuable record of government activity during a momentous period of United States History.

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But over and above these published indexes there is in every newspaper office that most valuable of all records for the local newspaper: the clipping file with its clippings arranged in alphabetical order according to author, title and subject. These are the indispensable tools of every newspaper where the published index, or even the card index of which we shall speak later, have not even been heard of. From a few hundred clippings on some of the smallest newspapers to the millions in the files of the Metropolitan dailies a vast fund of information has been gathered without which newspapers could hardly function. Among the largest of these collections are those of *The New York Herald Tribune, The New York World Telegram, The New York Sun, The New York Times, The Detroit News, The Chicago Tribune, The Boston Globe, The Christian Science Monitor, The Philadelphia Public Ledger, The Philadelphia Inquirer,* and *The Baltimore Sun,* to name only a few of the larger collections.

Many of these very valuable indexes and clippings are available only to members of the staffs on the newspapers who own them, though exceptions are sometimes made for their use by serious students. At *The New York Times* these files are available to the outsider only by special permission of the managing editor. The mutilation by unscrupulous persons has forced newspapers to adopt this policy.

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The card indexes, of which there are only a few, are cumulative records which, as time-savers, take precedence over any other. These are indexes on cards or slips of paper usually about $4\frac{1}{8}$ by $8\frac{1}{8}$ inches, as in the case of those of *The Times*. This cumulative index on cards in the office of *The New York Times* covers the period from 1905 to date, which includes that period barren of published indexes in the U.S., from 1905 to 1913, when *The New York Times* Index resumed publication.

The Detroit News has made a remarkable card index. Each news story which appears in any edition of the paper is recorded on cards 5 by 3 inches of very light weight. If the article so indexed has been clipped for the permanent file of clippings, the card is white. Otherwise it is blue. The notations briefly summarize the article, indicate the date, page and column. The cards are sorted alphabetically and filed. Stories of later developments are entered on the same card, using both sides of the card if necessary. Thus if you wish to find the date of death of Tom Jones, you have but to look in one file to get the information you seek though he may have died thirty years ago.

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There is another kind of index system developed by the *Philadelphia Public Ledger* which is called The Desk Index System. I have not seen it in operation but the very excellent description of it given by Mr. Robert W. Desmond in his book *Newspaper Reference Methods* certainly qualifies it as a most efficient way of indexing the newspaper and deserves serious attention.

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And now we come to an unusual development in newspaper indexing which has been sponsored by the United States Government.

The expenditure of funds for Welfare Work in the United States under the present New Deal Administration continues to be a major function of the Federal Government. While there are a large number of people on direct relief in the country, there are more than a million people who are on work relief, that is, more than a million people who are employed on various government projects to give employment to those who are out of work. The gravest problem that presented itself to the government was to find the kind of work suitable for the " white-collar man or woman." In Cleveland the problem was acute. It finally resolved itself in the publication of an index to newspapers. *Annals of Cleveland,* 1818–1935, is the result of a government project under The Works Progress Administration designed to give work to " white-collar workers." The project is successful indeed and the memorandum which I have received from Dr. Robert C. Brinkley, Chairman of The Joint Committee on Materials for Research, is too complete for me to expand upon it. I shall therefore read it to you as he gave it to me :

> In September, 1935, the Statistical Coordinator of Works Progress Administration projects in Ohio met with a group of professors and asked them to suggest possible white-collar projects. Among a number of ideas presented, opinion turned in favor of a plan to make newspaper information more conveniently accessible to scholars. Later the reference librarians were consulted and also the public schools. The newspaper files were known to be a vast

repository of unorganized information, valuable and interesting in itself but unavailable to most readers.

The planning of the project started with the fact that most of the white-collar workers were in the high-school education bracket without specialized training. It is easy to plan projects for Ph.D.s ; we had to plan for the average relief clerk. We realized that the product we had in mind would not be suitable for " publication " in the ordinary sense ; it would necessarily be limited in its circulation to a number of depositories far below that which is required for commercial publishing. We knew that the librarians would be fearful of wear and tear on their newspaper files, and would have to be assured that our product would give readers sufficient information to serve as a substitute for the fragile original file, not as a lure to bring increased use of the file.

A score of volunteers, some with experience in newspaper work and some with training in research, met several times a week from November, 1935, until February, 1936, to study the problem. When the project was released in February, 1936, they trained the relief personnel and then stepped out.

The general principle of the scope of the abstracting was fixed from the first : local news and opinion, the " who, what, when, where, how " of every story, and a flavoring of direct quotation. Decisions were made on scores of vital technical issues. For instance, there was the question of whether to arrange abstracts in broad subject classification, logically, or by narrow subject headings, alphabetically, or without subject headings, chronologically. There was the controversy between the journalists, who wanted to rewrite and work up stories, and the research group, which wanted to remain closely within the limits of the original newspaper. There was the whole problem of standardization of style. The departmental organization had to be elaborated, with fresh definitions of functions as new problems arose or as some system proved inaccurate or unworkable. Departments rose and fell ; crews were trained with increasing rigor for copyreading, quote-checking, proof-reading, indexing, etc. The editing department experimented with specialization that divided a volume among editors, and then with giving full responsibility for one volume to each editor.

The pattern of a Ford assembly line guided the management in the solution of these problems. Month by month, as the work crept along, the storm center of experiment moved with it. First it was in abstracting ; then in copyreading and subject heading ; then in controlling the " flow of work " to bring completed years successively into the editors' hands ; then in editing ; then production ; and finally in bookbinding, which is just opening up as this memorandum is being written.

Meanwhile labor problems arose, intensified by unionization drive. The decision was made to shift from hectograph as a duplicating method (originally planned) to multigraph, which was more durable and more legible. Then came delay in procuring multigraph equipment. Plans were made for Set-o-Type machines, but now policies caused a shift to hand-setting equipment.

Not until the end of March, 1937, a full year after starting,

were the kinks worked out and the full equipment in hand. Then concrete quotas of production were set, and a new cost system installed.

The objective to be met in cost is one cent a word for all writing processes, to the point where the production department gets the typescript; in multigraphing the objective is $2.25 per page. These are the *lowest* contract costs for writing and for multiplying in print. Average costs per page of printing research books by university presses run from $2.25 to $4.25. Ordinary writing is paid for at from one to two cents per word. Cost charts attached show that the production costs for all writing processes and for multigraphing are entering the price zone of private industry.

But the project is in a field that private industry could not occupy, because the edition is too small for commercial profit. Fifty libraries have ordered sets of twenty-five volumes for $25.00. These include all the largest libraries in the country. But there is no cultural need for an edition of 2,000 copies, which is the minimum needed to sustain commercial publication. The peculiar state of costs in printing is such that we are actually operating at commercial cost levels, in producing a commodity which is of high research and reference value, and yet we are not competing with private industry.

The present flow of work is feeding in daily at the top, in the form of abstracts, about as much material as is being run off daily at the bottom on the multigraph. The backlogs have been made for each department and the costs of all processes now appear in correct perspective.

In planning the continuation of the project, this state of flow will be continued during the next six months, during which time most, if not all, of the years from 1818 to 1900 will be completed through multigraphing. When the complete project draws to a close, the departments will successively be liquidated as they were successively built up. First the abstracting, then the copyreading, etc. until nothing remains but multigraphing and bookbinding.

Some of the costs of the first year of operation were costs incurred in building up the backlogs; some of them must be charged off to the experiment. The backlog costs will be amortized as the backlogs are consumed at the end of the project; the experimental costs will, we believe, justify themselves in the long run, for they have blazed a new trail. We are getting a high quality product out of a less skilled group than was previously thought possible.

In closing may I say that I hope that the material I have put before you will be of some use. I only regret that I am unable to be present to deliver this paper in person and hear what has been done in England and other countries in the same field.

Notes on Newspaper Indexing.

By THE LIBRARIAN of *THE TIMES*.

The moment an encyclopædia or reference book goes to press it becomes out of date. Biographical reference books, peerages, etc., published in December become incomplete on January 1st, when the New Year Honours are announced, thus giving titles to many persons named therein. In other ways new railways are opened, fresh speed records attained, new ministeries formed, legislation passed—these and thousands of other matters are of the utmost importance to many business organisations, but particularly so to newspaper editors ; and although in all newspaper offices a collection of cuttings is maintained in some form or other, the task of having easily accessible a record of all these happenings would be much more difficult were it not for the newspaper index, either in manuscript form or as a printed publication.

The newspaper index, therefore, is a record of the news of the world and a guide to much very useful information not to be found in reference books or encyclopædias. And its value is not confined to those who work in newspaper offices ; for in the newspaper is to be found the true story of the life of the people, and in the Newspaper Room at the British Museum people are to be found on every day of the year—or rather every day on which the Museum is open—poring over the files of newspapers. The index saves these research workers thousands of hours of day by day and page by page search. The benefits conferred by a really good index are already quite clearly recognized. The *Official Index* to *The Times* is produced, in the main, for the benefit of the paper, but, like the Index to the *New York Times* in America, it is, in effect, an index, or rather a guide, to all newspapers published in the United Kingdom—perhaps even farther afield ; for even in those offices and libraries where it is not found possible to retain, for any great time, a file of *The Times* in addition to the file of the local paper, librarians find the Index to *The Times* a ready help when searching other papers for an item of news : the death of a well-known personality, the report of an important Parliamentary Debate, the hearing of a leading case in the Law Courts, or the signing of a treaty. For if *The Times* Index does not give the actual page and column reference to other papers, it does give these particulars for matters appearing in *The Times,* and thus fixes the date to a day when similar information should appear in other papers. In fact, the Official Index to *The Times* supplies the reader with an unparalleled mechanism for tracing any event or fact recorded in the columns of the Press. It is so complete that it may fairly claim to be exhaustive : a reader who looks up a subject anywhere in reason will either find what he is looking for or else be directed to the proper place. Speeches are indexed under all the subjects with which they deal—sometimes under half a dozen places. With the help of the Index a reader is able to follow aerial progress throughout the world ; to refer to the progress made by public companies, as reported in annual meetings and announcements of dividends. It must be added that the Index will be found no less

useful in respect of matters of smaller import. Plays and sports are fully indexed, and so is every social event that is chronicled and every letter that is published, the latter being placed under both subject and writer's name. Many wills, deaths, and marriages are traced by readers of *The Times* by means of the Index without the otherwise necessary visit to Somerset House. Solicitors, too, are constant users of the work for tracing reports of leading cases. In preparing the Index the references are written on slips of paper which are sorted into a general alphabet at the end of the day; during the quarter these slips are prepared for the printer, to be returned in galley form for corrections before being made up into pages and bound. As far as is possible, the work is divided into sections, thus allowing indexers to follow their main subjects throughout the quarter. The work is carried out, not, as in the *New York Times,* from cuttings made from the paper, but from actual copies of the paper, each indexer marking off, on a file copy, those items he has covered, a check being made each day to see that no item has been missed. Five whole-time indexers are engaged on this part of the work, the preparation of "copy" and reading of proofs being done throughout the quarter by members of the Library staff. One great difficulty—and this is a common fault—is the growing "wordiness" of indexers, and the difficulty, when preparing copy, of cutting down, for it is not like sub-editing a news story where whole passages can, if necessary, be deleted in the interests of space. This matter must always be considered, for it must be remembered that a newspaper index is a costly affair, and the print bill must always be kept in sight, as must the unwieldiness of the volume. Indexing a newspaper is not the simple task that some people would think, for the indexing of three months' issues of *The Times* approximates to the indexing of ninety or so books. Were blind references only given, as in numerous book indexes, much of the work would be merely mechanical, but a study of the Index will show that one must carefully follow the subject-matter throughout the quarter in order to publish a complete whole at the end.

There have been several indexes to *The Times*, including one or two efforts to cover only leading articles; but the originator of the idea was one Samuel Palmer, who began his quarterly index at the end of 1867, working both backwards and forwards. In the early years the index was almost entirely written, composed, and printed on a private press, by members of his family. Although not perfect, it was an immense boon to those whose business it was to make searches through the files of *The Times*. In 1899 Miss Baily entered into competition with Palmer, producing a much more scientific work, but, unfortunately, this lasted only three years. For some years before the publication of the Official Index to *The Times* it had been found necessary to compile a manuscript index for office purposes. This served the paper at a time when speed in production was not such an important factor as it is to-day, and when readers did not appear to be so eager to refer back to old copies. But newspaper readers increased, and in 1906, recognizing the great value of the file of *The Times* as a repository of material for recent history, *The Times* began to publish a more elaborate work. From 1906 until 1913 the work was published monthly, the twelve parts being amalgamated and re-edited at the end of the year. The monthly parts were dis-

continued in 1914, the first six months of that year being published as one volume, and from thence a quarterly volume has been issued. It meets the requirements of the office—does it meet the needs of outside users? And in asking this question one must have in mind the surprisingly large number of people who seem to have not the faintest idea of using an index properly, and, coupled with this difficulty, one must think of those who are unable to state clearly what they require the assistant to search for. This, perhaps, is the more important; it is no use wading through an index on the chance of spotting what is required; first be clear in your own mind exactly what is needed and the task of finding it will be not so difficult. But, beware of those who have good memories and who are certain that the thing they want appeared in such and such a year or month. Long experience has proved that in a very large number of cases these people are far from correct in their surmises.

(*Continued from p.* 48)

purpose of supplying copies to libraries and students at home and abroad; these film records to be gradually indexed, as filed, including the indexing (separately, if necessary) of illustrations, designs, and plans.

This work would be regarded as forming part of the larger and more ambitious ultimate aim, namely, the gradual recording and making accessible of all the existing material of the kind described. If funds permitted, it was also proposed to locate specific issues missing from the British Museum files, and to complete these files by means of photographic copies.

The Council of ASLIB had satisfied themselves that the work outlined was important and urgently necessary, and were willing to undertake this work by means of a separate section of their organisation to be created and maintained solely for this purpose, if a grant of funds of adequate amount for a period of five years could be obtained.

Assuming the provision of adequate grants for the period indicated, the Council were of the opinion that the records accumulated and work done by its Newspaper Records Section would be proving, before the end of five years, of steadily increasing usefulness to a widening circle of research workers at home and abroad and also, in some degree, to the public at large.

These records would be of special value to the student from abroad who wished to consult material embodied in early English newspapers. For example, much information would be brought to light for the aid of research workers from America or other countries who may be investigating early political, economic, biographical, or social problems, etc.

It should be possible, therefore, to build up, within the first five years, a body of members who would be entitled to draw upon the services of the Section in accordance with the subscription paid. In addition to the amount of subscriptions so received, there should be available a substantial aggregate of fees paid by non-member users of these records and services.

On the motion of Mr. Ridley, the meeting unanimously supported a proposal that a resolution in support of the scheme should be brought before the Annual General Meeting later in the day. Authority was also given for the submission of a resolution urging upon publishers of newspapers the importance of the permanent preservation and thorough indexing of their newspapers. (Note: The full text of the resolutions appears on page 125.)

Newspaper Indexing.

By JAMES J. EATON.

The Spanish calamity is not our business here. But one of the many recent books about it contains, *inter alia*, a few lines which impressed me as being, quite apart from their context, of special significance to ASLIB. The author, Mr. John Summerfield, observes that the issues at stake are being faced not only in armed struggle and in mines and factories, but also in peaceful contemplation in laboratories and libraries . . . to decide "whether the enormous new powers that science has given to the human race are to be used for the organisation of decay or for life, for a mechanised barbarism or a new advance of the human spirit."

We need, I think, to remind ourselves that even—indeed, especially—in these troubled times, our purpose as special librarians certainly is not the organisation of decay or a mechanised barbarism, but of life itself. In the forefront of our aims is always the ideal of helping to plan the applications of science—using that term in its widest sense—towards "a new advance of the human spirit." Without dilating upon the claims to our attention of what Leslie Stephen called "that estimable entity the soul"—which, he also said, "they knew at Cambridge should be kept in its own place"—I cannot escape the impression that it figures, whether by way of inspiration or background, in the mundane matters we are gathered here to discuss.

From what my distinguished predecessors this morning have written on the subject, you will have guessed that Newspaper Indexing involves in effect nothing more than trying to organize Omniscience. Yes, Omniscience is the chief attribute with which librarians, and particularly newspaper librarians, are credited by so many artless enquirers. How often must we smile—when we do not blush—to receive that implied tribute! For if our craft has a secret, it is to try to keep from ourselves the knowledge of how little we know.

The illusion is preserved, however, because we do our utmost to employ all the devices at our command—an armoury of indexes and files and reference books and correspondents—and, when these fail, fall back upon pure guile. Editors and reporters, leader-writers and publicity managers, and all the rest of our colleagues for the most part accept our successful delvings with a bored satisfaction, our failures sometimes with ill-concealed derision or disgust. The public, however, knows that we know and is not often disappointed. Nor always ungrateful: only a few months ago a confectioner in a Yorkshire market town made a pilgrimage to my office, bringing with him a large Coronation cake in replica of the Crown of England for me—to admire. We had given him information and told him where to find a picture for guidance.

Properly to envisage the problem of Newspaper Indexing we must bear in mind, first, the various types of enquirers whose needs the work is to serve and, next, the kinds of questions they ask. Looking through my office correspondence and two large summaries of

enquiries dealt with in recent months, I can see no way to devise a simple classification which would give you at once a brief, detailed, and comprehensive picture. So we must try what can be done by means of a rapid general survey, with, I hope, apposite instances.

The chief function of a newspaper library is, of course, to provide immediate information for the use of the newspaper's staff. At any moment the library must be ready to tell any colleague, from the editor-in-chief to an advertisement canvasser or counter-clerk, exactly what he wants to know; and, so far as my own department is concerned, the inquisitiveness of the editorial and commercial staffs, in Leeds and London, of two dailies—one of national as well as local importance—and one big evening paper, provides always, day and night, a sufficiently heavy volume of queries quite diverse in character. These " internal " queries come in from London Office, over the wire, and locally by telephone, by written requisitions and personal visits.

Obviously, many of these enquiries are more or less routine in character: requests for statistical information of all kinds—of speed records by air, land, and water, of road accidents at home and abroad, of unemployment, drunkenness, crime—for comparative figures of population, acreages and heights and depths and distances, of agricultural crops, of imports and exports of and tariffs upon raw materials and manufactured goods—for dates and particulars of forthcoming social and political and sporting events—the main facts of inquests and criminal trials, railway and mining and aviation and other disasters, floods, tornadoes and earthquakes—who is engaged to, or marrying or divorcing, whom, who lives at what hall, and is he heir to that earldom ?—what has Mr. Bernard Shaw said on any subject under the sun ?—bibliographical points concerning celebrities, perhaps justly famous—authors, bishops, sculptors, aviators, racing peers, colonial judges, monarchs, playwrights, inventors, explorers, foreign diplomats, film stars, university professors—and of persons long or newly notorious for social or sporting or financial successes or failures or discovered crime—of the next recipient of the Order of Merit, an honorary degree, or a Nobel Prize, of the general who has just wrecked a South American Government, the new boy golfer, or the dictator who has devised the neatest insult to the League of Nations, mad mullahs and mushroom messiahs, the M.P. who will finally cure unemployment, the philanthropist endowing hospitals or research, the hero ascending highest into the stratosphere or the diver into deepest seas, the society hostess who is to fly round the world or go into a nursing home—and, at last, to die. That, if one may be forgiven for remarking the obvious, is the final end of the long quest for the superlative; and I would hazard that even the lurid annals of modern political crime hardly afford a parallel to the ghoulish joy with which a newspaper librarian tucks away the obituary of any particularly troublesome celebrity !

Now, I hope that discursive summary has given some idea of the " bread-and-butter " routine questions which the rest of the office asks the library. Of the public's share in our harassment I will tell you soon. Meanwhile, it is worth noting that practically all the office queries are instant, clearly expressed, and not trivial—in motive, at least. Of course, to a simple mind there is a certain satisfaction in retrieving what Mr. Winston Churchill said in 1933, tracing the

B.B.C.'s comment on the Cheddar Caves' " echo " or giving chapter and verse for recent pronouncements on philosophy by retired prize-fighters or on sport by eminent church dignitaries. Luckily, our colleagues often ask for information on more interesting matters : " New Deal " legislation in the U.S.A.—the genesis of non-intervention—the discovery of a mediæval dyke at Lincoln—the attitude of the Vatican to religious persecution in Germany—comments on Mr. Wells' address at the B.A. on " Education "—the effects of the U.S.-Canada trade agreement—history perverted on the screen—what the Surrealists have been doing lately (if anything)—the southward trend of industry—excavations at Maiden Castle—slum clearance, the decline in population, the discovery of " heavy nitrogen "—and so on.

The steady trade which we do in tracing literary quotations is a sideline without reference to the Index, but " Letters to the Editor " do provide some points for its use in our research. The relative bona fides of the writer, his proper description and social, technical, or business standing, the accuracy or otherwise of his statements of fact, and what other letters on the same subject have been published—all this investigation must be done before the letter can appear in print, and a good deal of it falls to the library's share.

Next, we may glance at what the inquisitive public wants of us. The huge mass of legal queries, so rich in the human raw material of domestic bliss, neighbourly malice, and persistent avarice need not concern us here ; for, though the replies go out over one's signature, a lawyer has done all the necessary research. The rest of our readers' enquiries come in by post, telephone, or personal visit. Of these it would be strictly true to say that whatever " comes home to men's business and bosoms " sooner or later finds its way to us in question form. All the subjects I have already indicated and many, many more come under review, a certain proportion being relatively or entirely trivial ; and, apart from telephoned enquiries, the majority of which are answered directly by reference to it, the Index plays a much smaller part in dealing with readers' than with office queries. So many of their letters, you see, are requests for names and addresses or other particulars of every kind of club, society, hostel, school, asylum, business firm, often of some non-existent organisations which enquirers hope we may unearth to meet their special needs, or for advice upon how to win scholarships or choose careers, to plan holiday itineraries, or to realise fortunes by the sale of stamps, coins, suspected " Strad " violins, old paintings, engravings, and books and furniture—even, I remember, two woollen shawls over 100 years old thought to be genuine Paisley. Certainly the Index for the appropriate year will enable us to say " when was the last air-raid over England during the War, and oblige," and will lead us as quickly to the report of the Zeppelin *Hindenburg's* voyage over Yorkshire, but it will not serve to correct a reader's impression that the ordinary seagull weighs only two ounces, nor give the distance from Leeds to most places on earth, nor provide replies to such questions as :

Is swimming a sport or a recreation ?
Should not my son-in-law use a roller when making his lawn ?
Is there a rigid rule for wearing evening dress in the best seats of the Paris theatres ?

A bird-box in my garden is filled with a wasps' nest. What shall I do ?

My wife will persist in using water from the hot-water tap for cooking. Is not this dangerous ?

Does a Scotsman when he enters England become *geologically* a foreigner, and vice versa ?

Still the work goes on, and the newspaper librarian must remain polite, even urbane.

It is true, of course, that our best of evening papers necessarily sweeps with a wider net than its less exuberant elder brother "daily" and to that extent a more mixed clientèle is represented in its post-bag ; but I would not have you believe that even the least literate among readers all and always ask stupid and unnecessary questions. Then, it must be remembered, the Yorkshireman—and here I am again on very delicate ground—inhabits and inherits a county whose acres exceed in number the letters in the Bible, and perhaps for this reason his intense local patriotism tends naturally towards superlative claims, in a manner—how can I phrase it ?—almost transatlantic. Certainly he seems always to be having arguments and making bets to prove that his county boasts the highest inn, the smallest church, the oldest blacksmith, the heaviest snowfalls, the most torrential floods, the loveliest dales, the smokiest towns, the strongest men, and most beautiful women to be met with in England's green and pleasant land. And he refers, in his hundreds of letters or telephone calls a year, to my department to confirm these claims. Sometimes we can.

It is natural enough, too, that special public celebrations, the incidence of remarkable spells of weather, or the passing of legislation arousing fierce controversy, should be reflected in the enquiries received on such occasions. The passing of what is known as the " Sedition Act," for instance, produced among others a request from a pacificist for particulars of the occasion during the War when, it was alleged, the authorities seized and destroyed pamphlets circulating a reprint of the Sermon on the Mount ; and the Coronation generated a very large crop of topical " teasers," culminating in a request—which we satisfied—for exact details of how to build a village Coronation bonfire, and this—" My latest child is a Coronation-day baby. Do we get a bonus ? "

The questions posed by our readers are by no means all froth. Many are of serious, dynamic interest, which well repay our research ; matters of vital importance in economics and art, politics and philosophy, science and literature and social welfare. Doctors, lawyers, public officials, wool merchants, engineers, banks and insurance companies' managers, publicity agents, schoolmasters, architects, men of all ranks and professions write or call to enlist our help, not only to find personal comments on themselves or their competitors, but in following up the record of past developments or new phases in their work as reported or discussed in our columns, whilst local councillors will look in to confirm their grip of public affairs, or an M.P. to gather ammunition for his next speech in the House.

I have tried—not too successfully, for I can see gaps which lack of time prevents my closing—to picture to you what information a newspaper library is expected to provide, and to suggest, very broadly,

how the Index is used as our prime instrument of research. No exact line of demarcation can be drawn to separate precisely all our queries into two kinds—those which can be answered by reference to the Index and those which cannot; for there are many instances in which, although no direct reference to the subject in hand is to be expected in the Index, a little patient detective work based on experience will draw clues from it, leading ultimately to a cutting in the files or some other source from which the required answer is obtained.

The Librarians of the *New York Times* and *The Times* have told you how their Indexes are prepared. As the leading newspapers, and in effect, national institutions in their respective countries, these two august organs produce their Indexes on a scale suited to their printing in volumes for world-wide circulation. Where publication is not intended, far less elaboration is required. At present the Index to the *Yorkshire Post* is produced under supervision by one member of my staff, who, with the Index cabinet and a pile of 5in. by 3in. cards beside him, runs through each day's editions and types summary references to every item on these cards, making cross-references on corresponding cards, wherever necessary. Through the testing by daily enquiries, we are able from time to time to improve the Index by corrections and additions. In the course of a year an Index comprising twelve thousand or so cards is built up; and it has been our practice hitherto to have the whole of the entries thus collected copied by typewriting on strong foolscap sheets, which are finally bound into two big volumes of about 1,000 pages each, with an average of thirty-five to forty or more entries per page.

I am now turning my attention to the possibility of improving our method by the application of micro-photography to this part of our work. Unless there are lurking "snags," which will emerge on investigation, the advantages seem obvious. A microphotographic film copy of all the cards in a year's Index would occupy infinitely less space than the cards, and in this form the Index could be consulted by means of a suitable projector, whilst this method should prove less costly than the work, time, and material spent in the lengthy recopying necessary for producing the bound volumes. By courtesy of a firm already well-ahead in the microphotographic field in the U.S.A., and now developing similar facilities in this country, I have been provided with a brief specimen film showing a few cards from the *Yorkshire Post* Index for 1934, and a projector machine is available here for its inspection.

Our survey has shown that, both in the U.S.A. and in this country, the Index plays a vital part in the economy of every great newspaper, being the master key to published information. I am glad that Miss Walker has boldly extended the scope of our considerations beyond contemporary practice to include the newspapers of the past; though I hope it will not be considered hypercritical to deprecate her too comprehensive application of the term "indexing." For the sake of clarity, I think, the excellent pioneering work of which the volume edited by Miss Winifred Gregory is at present the only example would be less ambiguously described as "listing." Miss Gregory and her helpers produced that volume in co-operation with an expert editorial committee appointed by the Bibliographical Society of America. Thanks to the enterprise of Professor Hutton and the

courtesy of its publishers, a specimen of the work is available here for your inspection. As you will see, it provides a complete Union List of Newspapers in the Libraries of the United States and Canada, showing their location everywhere throughout that vast area—a most important and valuable piece of research, upon which, I am sure, ASLIB heartily congratulates all concerned.

Towards the end of 1936 I had the privilege, in conjunction with Mr. W. J. Paylor, of submitting to Mr. Ridley, and subsequently to a small *ad hoc* Sub-committee of ASLIB, a first outline sketch of a comprehensive scheme for discovering the exact extent and location of this country's treasure of old newspaper files, and rendering their contents fully accessible to students—the production of a complete Union List for Great Britain on lines similar to that compiled by Miss Gregory for the United States and Canada being the opening stage of the work envisaged. I will not now describe the project, beyond saying that, with the approval of your Council, the Sub-committee concerned has worked on the problem for several months with great vigour, hammering the rough plan into practical shape. The main lines of a workable scheme have been laid down, and—a very important point—a number of eminent persons, including Mr. H. G. Wells, Lord Eustace Percy, Sir Richard Gregory, Mr. Arthur Bryant, and Mr. A. F. Pollard, have expressed their approval of the scheme. We hope to be in a position to begin the work in the not-distant future.

DISCUSSION.

The Chair was taken by Captain A. C. Taylor, M.A., Vice-President of the Newspaper Society. The paper by Miss Marie-Anne E. Walker had been presented by Professor R. S. Hutton, and that by the Librarian of *The Times* by Mr. B. M. Headicar. Mr. J. J. Eaton presented his own paper, and the meeting was then thrown open for discussion.

Mr. W. M. Wright claimed that the importance of newspaper indices could not be overstated. Such indices of the eighteenth-century local papers would be of immense value to students and research workers. The want of such an index had been specially found at Bath—a city which is an epitome of English social life. A subject index, with alphabetical list of arrivals to the city, which was now being compiled of the Bath papers dating from 1748 had already been valuable in answering the many questions received at the Library on social events and persons at Bath during the Georgian era. Though the task was enormous, it had its pleasant features in recording forgotten events or the arrival of some notable person, such as Gainsborough to Bath, some two years earlier than modern biographers state. The bringing to light of a hitherto unknown essay by Samuel Johnson made the arduous work exciting, or the rendering of eighteenth-century printed poems and anecdotes, which the editor would think twice before printing to-day, added considerable amusement to the task. Some modern novelists would no doubt welcome these items of interest.

Dr. W. Rosenberger gave details of the editorial policy with regard to the compilation of *Keesing's Contemporary Archives*. Two questions had to be solved in producing the publication, namely, how to compile a concise and yet comprehensive, a varied and yet unbiased summary of world events as reported in the Press, both national and international, in a form which would never become obsolete; secondly, how to index the news material collated. The second problem was solved by the adoption of an indexing system by which there was a constant renewal of the index copy. The year was divided into thirteen periods of four weeks each, and within each period there were four indices following one another and each incorporating the full contents of the previous one. When the four weeks were over the text of the latest index was transferred to the General Index, which took in every four weeks the items of the previous period, combining them with the existing entries. Thus it will be seen that there could never be a gap and as the publication

was based on three-yearly cycles, each General Index also finally comprised three years. To make the handling of the index easy the indices were numbered and the weekly and monthly ones were printed on paper of different colour. There was always a note on the top of each index saying which of its predecessors was to be discarded. To link the news sheets with the Index, the various articles on each page were marked by letters, and in the Index reference was simply to, say, page 2639, letter B. To make reference more convenient, however, the date on which the Report was published was included in the Index, together with a brief indication of its contents. As each volume, and consequently each Index, covered three years, it would otherwise be rather complicated to turn up immediately the report on, say, the Budget in 1936, if there were merely a page number and a letter without the date of publication of the actual report. Another help given to readers was the inclusion of cross-references, by which the reports were linked, dealing with the same or similar subjects. Thus there were to be found under almost every report a little note saying " Previous report . . . " and by this means it was possible to go backwards to the reports on the same or a similar subject previously published without consulting the Index each time.

The Chairman, Mr. H. Farr, Mr. H. Rottenburg, and Captain C. W. Hume were among those who took part in further discussion, after which Mr. A. F. Ridley summarised the grounds on which the Council had prepared an appeal for funds to undertake the compilation of " finding " lists and indices to British newspapers up to 1800, as follows :

Proposal to Inaugurate a Necessary Bibliographical Investigation of Importance to all Research Workers.

In the British Museum, the Bodleian and other great University Libraries, the Public Libraries and, to some extent, in the private ownership of the original proprietors and publishers, there existed collections, large and small, of old newspapers, ranging from the old-established leading London and provincial journals to innumerable small local and specialised periodicals.

Covering the period from 1622 onwards, the major part of the contents of these publications had, by the lapse of time, become valuable material, of importance primarily to historians, antiquarians, and students of literature, but also to educationists and economists, to journalists, artists and play producers, and to some commercial enterprises, such as film-producing companies and publicity firms.

This vast mass of historical, literary, and other material, however, was largely inaccessible for purposes of research or, at least, was only accessible with grave waste of time and energy, as at present no comprehensive " finding " list existed to show the student the location of the old newspapers, though such valuable publications as *The Times* Handlist, the Bodleian list recently issued, and the Union Catalogue of Periodicals in the University Libraries shortly to appear, covered certain noteworthy areas in this field and provided very useful material for incorporation in the finally unified list envisaged by the ASLIB scheme. Moreover, except for the Index to *The Times,* the earlier portion of which left much to be desired, no index to the contents of the old newspapers was available.

With these facts in mind, the Council of the Association of Special Libraries and Information Bureaux had been exploring the position in order to initiate, if possible, the undertaking of certain research in this field which they regarded as of great importance. In its first stages the work contemplated would comprise :

(1) The compilation of a comprehensive British union " finding " list of all the British newspapers and periodicals to 1800, including, as far as may be possible, collections in private ownership.

(2) The compilation, so soon as the " finding " list was in active progress, of an index to the contents of newspapers down to 1800. It was suggested that a start should be made by indexing the newspapers for those periods which, in the opinion of an Advisory Council of experts, were most likely to yield information otherwise unobtainable and were thus of major importance to students.
N.B. The " finding " list was intended to include all classes of periodicals ; but it was proposed to index only newspapers.

(3) To produce, as soon as possible after the preliminary work set out above, photographic (e.g. micro-film) records of the material, especially for the

(*Continued on p.* 41)

Scientific and Technical Research in Soviet Russia.

By S. P. TURIN, D.Sc.(Econ.)

Lecturer in Russian Economics and Institutions, University of London.

I feel that Mr. Ridley has put me in a position of great danger: he has asked me to address this Conference, but never told me, until after I had accepted his invitation, that Mr. Crowther would be in the Chair. I should have been afraid to accept, for you know that Mr. Crowther is *the* authority on the subject and his books on Soviet Science give you all the necessary information.

My only excuse in addressing you, therefore, is perhaps the fact that I used to be closely connected with the University of Moscow, of which I am a graduate and where I taught Political Economy as one of the young pupils and colleagues of Professor Manuilov.

The University of Moscow, founded in 1755, and the Academy of Science, founded in 1726, were mother and foster-mother of learning in Russia. In spite of all changes—political and economic—they have preserved the continuity of their work and to the present day are the main sources of science and knowledge in Soviet Russia.

It would hardly be necessary for me to say that Russia has given to the world scientists and academicians of international standing, like Mendeleev and Pavlov, and great poets and statesmen, whose spirit and writings are still alive in the hearts of Russians. Recent years have also produced workers in the field of knowledge whose names and works will become better known as time goes on, when my native country becomes more settled in the third decade after the Revolution of 1917.

Nor is it necessary for me to give here any account of the present scope, organisation and extent of scientific work in the Soviet Union. Those of you who wish to refresh their knowledge of the work done during the last two decades will enjoy re-reading Mr. Crowther's books to which I have already referred, and Chapter XI, "Science the Salvation of Mankind," in Sidney and Beatrice Webb's book on *Soviet Communism*.

I will attempt to discharge a much more modest task. I will endeavour to outline here the chief sources and channels of research in Russia and to show the ways and means by which we can establish contact.

For the past ten years I have been constantly engaged in work on Russian material. And contact with Russian sources of information has only served to deepen my conviction that the possibilities of obtaining first-hand information are very great indeed, but that there is need also for establishing some system of regular research-work on manifold Russian subjects. The country is in a state of construction: a vast amount of material is produced. But much that is valuable is disappearing and going out of print: books are re-written in such a way that a second edition may bear very little resemblance to the first. A constant watch on publications ought to be kept in order to obtain really exhaustive knowledge of any subject of research.

" The rapid growth in extent and importance during recent years of Russian technical and scientific literature is a matter of the greatest interest and importance to many of the members of the present Conference," said your Chairman, Mr. Arthur Ridley, in one of his letters to me. And he was right. Interest in the study of Russian problems in this country, according to my own observations, is increasing and becoming more definite, specialised and constant. The interest is shifting more and more from purely political problems to those of commerce and industrial and political development. Students of Russian problems now feel the want of more practical knowledge of the methods of planning in Soviet Russia and of the organisation of industry, foreign trade and internal distribution in commodities. And I was very much grieved that the Readership of Russian Economics and Institutions at the London School of Economics and Political Science has been left in abeyance just at the time when it was more needed than ever before. The Libraries of the British Museum, of the London School of Economics and Political Science, of the School of Slavonic and East European Studies, of Chatham House, Oxford and Cambridge, not mentioning other institutions and information bureaux, afford valuable opportunities to researchers. I hope that the heads and members of these Libraries present here will agree with me.

But these opportunities, valuable as they are, are good and valid only for the first and most important stage of research. In order to bring research work to its subsequent and final stages, constant contact with materials, information and the work of various Russian Institutes in Soviet Russia itself is necessary, and, indeed, indispensable. This contact, once initiated by us, will be welcomed by Russian scientists and researchers in the Russian Universities and State Scientific Institutes. The Russian Libraries, if we approach them in the right spirit, will be as generous and helpful as any of the Libraries in the world. I personally have always enjoyed the greatest assistance of librarians both here and in Russia, and I cannot find adequate expression of gratitude for all the help I have received.

But there are certain conditions with which we must comply in establishing regular contact with Russian institutions. I will deal with these conditions at the end of my address. Meanwhile, I hope you will permit me to give general information as to the existing Research Institutes in Soviet Russia.

On the whole, there are 804 Research Institutes in the Soviet Union, with an army of 32,617 scientists attached to them. Each Department of State has its own set of Research Institutes. The People's Commissariat for Health has 262 Institutes, the Commissariat for Education, 104, the Commissariat for Heavy Industry, 108, the Commissariat for Agriculture and Collective Farms, 84. The remaining Institutes belong to the *Sovnarkom* (Council of People's Commissars), the *Tsik* (the Central Executive Committee), the Commissariats for Food and Transport. The Trade Unions have twenty Research Institutes of their own. Each one of these institutions is naturally engaged mainly in work for its own organisation and enterprises.

Mr. Crowther has furnished us with a description not only of the Research Institutes attached to the Commissariat for Heavy Industry,

but has given us a vivid picture of what is being done in the Soviet Union in the sphere of applied sciences and has described the work of the oldest scientific institution—the Academy of Science, which, as I have mentioned, was established in 1726 and which, according to the Webbs : " although fully accepts the Soviet Regime, only a small proportion of its members belong to the Party. At the present time the 93 academicians are of the following specialities : mathematical sciences, 4 ; physics, 8 ; technics, 18 ; chemistry, 10 ; geology, 8 ; biology, 13 ; history, 6 ; social economy, 6 ; European languages and literature, 10 ; orientology, 8 ; and philosophy, 2."

Parallel with the Departmental Research Institutes of the Commissariats and of the *Gosplan* (State Planning Commission), which deal mainly with the technical problems of reconstruction and quinquennial programmes, there is another layer of research work in Russia which is proceeding on more scientific, theoretical and academic lines—as far as this can be done in a country which is undergoing complete reorganisation of its whole social, economic and political life. It is to the work of the Russian Universities that I should like to draw your attention. University education in Soviet Russia has, as you know, undergone the same kaleidoscopic changes as all other branches of social, economic and political life during the last two decades. The Russian Universities are, strictly speaking, only now beginning to take the shape which would enable us to compare them with the old Russian Universities and with the Universities of this country.

I have in view mainly the Universities of Russia proper (R.S.F.S.R.). There are also Universities in other constituent Republics (especially in the Ukraine and in the Caucasus), but they are mainly engaged in developing their national cultures, and their teaching and research are conducted in their own national languages.

Nor shall I touch here upon the work of the innumerable technical colleges and polytechnics ; these should be studied together with the work of the Research Institutes connected with the Commissariats, as their task is to train *cadres* of practical workers rather than scientists. Specialists and people interested in the development of higher education in Soviet Russia will find an enormous amount of material and information here, for since the War the number of the educational establishments and students in Russia has increased more than four-fold (525,000 students in 1935–6 as against 125,000 in 1913–4). There are in Russia proper (R.S.F.S.R.) thirteen Universities with 17,000 students and 380 professors and 1,305 lecturers. The character of study and teaching has experienced great changes since the War. Nearly every University has the following faculties : physics, mathematics and mechanics, chemistry, biology, geology and geography. Philosophy, literature and history are taught mainly in special Institutes, although Chairs in History remain at the Universities of Moscow and Leningrad. Every University has a net of Research Institutes (and that is quite a new departure : in my time we had only seminars and laboratories). The Research Institutes must naturally give a great deal of their time and knowledge to the problems of reconstruction, and they are sometimes burdened with practical work at the expense of pure scientific and academic research.

Here is a list of Research Institutes at the various Russian Universities, together with a list of State Institutes in Leningrad and Moscow

which have close links with the Universities and which I hope may be of some interest to you.

I. Scientific Research Institutes at the Russian Universities in the R.S.F.S.R.

	Names of the Universities.	*Year of foundation*	*Number of students.*	*The most important Research Institutes and Laboratories.*
1	University of Moscow	1755	3942	Mechanics, Mathematics, Physics, Chemistry, Botany, Zoology, Geography, Micro-biology, Anthropology, Astronomy and Investigation of the Quality of Soil.
2	Leningrad	1819	3948	Mechanics, Mathematics, Physics, Chemistry, Biology, Physiology, Economic Geography.
3	Kazan	1804	1406	Chemistry, Observatory.
4	Saratov	1909	1161	Irrigation.
5	Tomsk	1884	1526	Physics, Mechanics, Biology, Chemistry.
6	Voronezh	1918	1038	Laboratories in Physics, Chemistry, Mathematics, Zoology, Biology, Geology and Geography.
7	Perm	1917	788	Biology, Chemistry, Geology and Physics.
8	Sverdlov	1931	549	Natural resources of the Ural Mountains.
9	Gorki	1931 (1918)	537	Physics, Mechanics, Biology, Chemistry, Zoology, Genetics.
10	Rostov-Don	1915	664	Laboratories in Mineralogy, Chemistry, Geology and Biology.
11	Irkutsk	1931	490	Biology, Geography, Natural Resources.
12	Vladivostock	1923	608	The Study of the East and Linguistics.
13	Alma-Ata	1934	355	Biology, Physics, Chemistry.
			17012	

II. The Scientific Institutes of Moscow and Leningrad.

Leningrad.

1. The State Institute of Astronomy.
2. The State Institute of Radiology.
3. The State Institute of Röntgenology, Radiology and Cancer.
4. The State Institute of Biology (P. S. Leshaft).
5. The State Institute of the Brain.
6. The State Academy of the History of Material Culture (N. Y. Marr).
7. The Leningrad Institute of History, Philosophy and Linguistics.
8. The Leningrad Institute of Languages.

Moscow.

9. The Institute of Psychology (G. I. Chelpanov).

10. The Institute of Genetics.
11. The Institute of Physiology.
12. The Institute of History, Philosophy and Literature.

A mere glance through the list of Research Institutes at the old and new Russian Universities shows that research is done mainly in physics, mathematics, mechanics, astronomy, biology, chemistry, geography and investigation into the quality of soils.

It will be quite impossible for me to give more than a few instances of what is being done in them. To give a complete picture of a scene which is ever changing, requires constant care and watch, and it is my hope that some day or other some apparatus will be brought into being so that our knowledge of the vast experiment carried out in Russia is co-ordinated and up-to-date.

I will take only three—the oldest—Russian Universities, those at Moscow, Leningrad and Kazan, and will give a short outline of the work of some of their Research Institutes.

The University of Moscow can boast that it has got hold of the best-known professors and academicians: among them are L. T. Mandelstamm, M. A. Mensbir, I. A. Kablukov, P. S. Alexandrov, Zelinsky, Rakovsky, Lukin, Frumkin, Tamm, Lansberg, A. N. Kolmogorov, Kulagin, Zavadovsky, Serebrovsky, Matveev and others.

The Moscow Institute of Mathematics and Mechanics, under the guidance of P. Alexandrov, N. Luzin, A. Kolmogorov and others, has made good progress in furthering the study of the theory of variations and has produced monographs for the German *Ergebnisse der Mathematik*. The problem of bringing pure mathematics into close contact with mechanics and the natural sciences occupies the minds of young scientists, although they do not deny the necessity of developing the history and philosophy of mathematics. Marx naturally finds his place here as well, and Mme S. A. Yanovskaja has prepared for publication the mathematical MSS. of Marx.

L. I. Mandelstamm and G. S. Lansberg, of the Institute of Physics, are working on the "Raman-effect" in optics, which it is said they have discovered at the same time as Mr. Raman in Calcutta.

The school of O. Y. Shmidt, famous polar explorer and mathematician, may present us with their new discoveries in algebra.

L. V. Sorokin, of the Institute of Astronomy, invented an apparatus for measuring the force of gravity on the Black Sea.

In Leningrad University we meet another pleiad of well-known scientists: A. E. Favorsky, A. A. Ukhtomsky, I. I. Zhukov, V. E. Tischenko, V. I. Smirnov, F. J. Levinson-Lessing, J. Shokalsky and others, who take a keen interest in the work of Research Institutes.

The Biology Institute of the University of Leningrad, situated near Peterhof, in the former palace of the Herzog Leihtenberg, has developed its research work on a very wide scale and has established eight laboratories: two for zoology, one of hydro-biology, then genetics, histology, physiology of plants and their classification, and herbaria.

In the old University of Kazan, which was the alma mater of Lenin, we find such well-known names as those of N. G. Chebotarev, A. E. Arbusov, N. N. Parfentiev. Research work has been developed

mainly in chemistry and astronomy. The Kazan Observatory claims that it holds the monopoly of observations of the Moon and is preparing a new map of the Moon. All who will have the chance of visiting this old historical city and its University will admire the work done in the sphere of science and research.

The Academy of the History of Material Culture, which began as an archeological society, has now become the centre of the study of pre-capitalistic society. The research work here is carried out by four Institutes, according to the period they study: primitive society, antique serfdom, feudalism and history of technology. Lectures are delivered by men like V. V. Struve, B. D. Grekov, E. D. Grimm, A. Yakubovsky and other specialists.

The Academy publishes the *News of the Academy* and a monthly journal, *Problems of the History of Pre-Capitalist Society*. It has published also over sixty monographs, which have great theoretical interest, and has organised about 100 different expeditions.

The Leningrad Institute of History, Philosophy, Literature and Linguistics, which exists since 1930 as a separate Institute, inherited from the Leningrad University very good scientific equipment, laboratories and first-rate specialists. It has 263 members, amongst whom we find eight academicians and sixty-eight professors. The following are amongst them: V. Struve, E. Tarle, B. Grekov, N. Piksanov, A. Aizenberg and others. (I am sure that Mr. Wharton knows all of them.) Four faculties of the Institute prepare *cadres* of scientific workers and teachers, equipping them with good, solid knowledge and training. The Faculty of Literature possesses a library of 20,000 volumes.

The Moscow Institute of History, Philosophy and Literature has in its three faculties 947 students and 158 post-graduate research students; the course for under-graduates is five years, for post-graduates—three years.

The following professors are amongst the teaching staff: in history —V. Nickolsky, Berg, Kossminsky, S. A. Piontkovsky, P. G. Lubomirov, S. V. Bachrushin, N. P. Gratsiansky, V. M. Lavrovsky, Y. V. Gotie, Ch. G. Lurie, F. A. Kogan-Bernstein, Erusalimsky and others; in philosophy—G. F. Dmitriev, Milonov, Z. E. Beletsky, M. N. Korneev and M. I. Suslin. The Faculty of Literature, which was opened in 1934 only, has three departments—literature, arts and linguistics.

The Institute possesses a library of 80,000 volumes and has done many valuable translations, has published many original investigations and text books. It has translated into Russian J. Jusserand's: *English Wayfaring Life in the Middle Ages*.

I must apologise for keeping you so long with this dry enumeration of works, done by the Research Institutes, but I must mention here the Leningrad Biological Institute in memory of Professor P. S. Leshaft and the Moscow Institute of Psychology.

In my time it was everyone's hope to become a student of the Leshaft Institute, which, by the way, was not looked at favourably by our former Government because of its liberal tendencies. This Institute made its name by issuing seventeen volumes of *News from the Laboratory* and eighteen volumes of *News of the Scientific Institute*. The Library of the Institute, consisting of 16,000 volumes, is one

of the select libraries. At present the Institute has the following departments or faculties, headed by experienced professors: Physiology (L. A. Orbeli), Physiological Chemistry (N. V. Vesselkin), Micro-biology (G. L. Seliber), Morphology of Man (S. P. Lebedkin), Histology (A. A. Zavarzin), Comparative Morphology (K. M. Derugin), Chemistry and Physics (I. I. Zhukov), Spectral Analysis (G. A. Tikhov), Applied Astronomy (N. A. Morozov), Physiology of Plants (V. N. Lubimenko).

The old Institute of Experimental Psychology, established by Professor Chelpanov in Moscow in 1912, was also very famous in my time. It has undergone fundamental reorganisation since the Revolution and it works now under the guidance of Marxian professors.

I do not describe here the Institutes of Radiology, Röntgenology and the Institute of the Brain. You will find some references to them in the Webbs' book in Chapter XI of the *Soviet Communism*. I have no time now to devote to a description of Institutes dealing with Astronomy, Geography and Geology, the surveys of which may be envied by our geographers and geologists in so far as they have almost unlimited possibilities of obtaining funds and government assistance. The Seventeenth International Geological Congress, which held its session in Moscow this July, attracted many foreign specialists and our geologists from London will present us, I am sure, with very interesting information as to the pre-Cambrian age, " geological time " and the geological map of the Soviet Arctic.

You will have found in this brief enumeration the names of old scientists. You have heard also of the progress made by young scientists who carry on the work of the old schools: there has not really been any break in the continuity of pursuit of knowledge. If anything, there is a new eagerness and new methods. The Russian Universities and Research Institutions have the advantage of not being hampered by lack of funds. They can afford to experiment and learn without regard to cost. They can feel their way to discoveries which have no immediate practical value. And the queer thing is, that the ordinary people take the keenest personal interest in reports of these discoveries. Look, for instance, at the daily reports as to the weather on the North Pole. Everyone in Russia is interested in them, and I can see a housewife in some remote Russian village, cooking the dinner, feeling quite unhappy if she does not know whether it is raining or snowing on the North Pole.

The Russian Libraries are a second source of information. There were in Soviet Russia, according to the Census of Libraries of 1934, 67,286 Libraries with 270,869,660 books and 55,198 Library workers. In 1936 the number of Libraries had risen to 70,000, with 300,000,000 books and 30,000,000 registered readers. In the Census of 1934 all Russian Libraries are classified in the following table.

Group D, Science and Special Libraries, is, as you will notice, the largest as regards the number of books and the average size of each Library, Universities and Research Institutes have at their disposal 84,000,000 books.

The third source of information is publications. Every University and every Research Institute publishes the results of its work in the shape of quarterly journals, memoranda or separate monographs.

Libraries.	*No. of libraries.*	*No. of books.*
A. Libraries for the "masses of population"	50,569	92,573,163
B. Independent Libraries for Children	301	2,320,639
C. Libraries at the Technical and Secondary Schools	4,730	44,528,035
D. Science and Special Libraries	11,686	131,447,823
In them :		
(a) State and Public	173	28,246,253
(b) Research Institutes	2,235	35,839,085
(c) Universities and Polytechnics	1,139	48,360,960
(d) Government Departments	512	3,003,577
(e) Party and Comsomol	484	2,088,134
(f) Trade Unions, Co-ops, etc.	163	1,206,986
(g) Agricultural	482	289,420
(h) Reference Libraries	4,554	7,414,373

The majority of these publications hardly ever reach this country, although they are the most important source of information.

The number of scientific, technical and general periodicals is enormous :

The Academy of Science publishes	15	periodicals
On Geography, Ethnology and Regional Studies there are	10	,,
On Natural Science, Physics, Chemistry and Mathematics there are	34	,,
On Mechanics, Industry, Transport and Communications there are	184	,,
On Agriculture, Livestock and Veterany there are	54	,,
On Medicine and Biology there are	50	,,
On Social Economic and Political Problems, Literature and Education there are	253	,,

The total is exactly 600 periodicals ! I hope this number does not frighten you. It shows once more how necessary it is to establish special apparatus to deal with them in order not to lose ourselves in the thick forest of Soviet publications. And I am afraid that Mr. Headicar has to think hard how to adapt his pamphlet boxes for Russian periodicals, which are each of different shape.

Now I will return to the question of conditions with which we must comply in order to overcome several difficulties.

The first condition is to emphasise our *bona fide* interest in scientific and technical research and to show that we are not pirates or Trotskyists and that we do not want to utilise Soviet inventions and patents for the purpose of undermining the whole Soviet system, that our aim is international collaboration in the interests of science which by its very nature is international.

The second condition is that intercourse must be established through officially set up channels ; it may be the Academy of Science,

the Universities of Moscow or Leningrad assisted by the *Voks* (which is the centre of all societies of Cultural Relations established abroad), and which holds the monopoly of helping foreigners who visit Russia.

This, of course, does not exclude direct intercourse with any scientists on the spot. But if they do not answer all our letters, it is not because Russians are bad correspondents : it is because they have to comply with the discipline imposed upon them by the whole Soviet system. There is a code of behaviour for party and non-party men alike, similar to that imposed during a state of war. This is the necessary attribute of any dictatorship.

But if it is recognised that normal scientific and academic intercourse with the Soviet Union is necessary in the interests of both countries, it is clear that it must proceed on the same lines as diplomatic and commercial relations, or on the lines of mutual exchange, similar, perhaps, to the exchange by the London Zoo of baby elephants for Siberian wolves and cats.

I realised this necessity of mutual intercourse long ago, and have been advocating the establishment of some central research body for some time. Unless something is done in this direction, research on Russian problems must needs remain casual, unsystematic and uncoordinated.

DISCUSSION.

The Chair was taken by Mr. J. G. Crowther who, in his opening remarks, stated that the economic and industrial development of the U.S.S.R. had brought into existence a large number of technical journals. Many of these were not easily accessible in England, and it was very desirable that they should be better known. The exchange of scientific and technical information between England and the U.S.S.R. was far from satisfactory. The fundamental cause of this was the unsatisfactory political relationship with the U.S.S.R. From the beginning of the Revolution the people of the Soviet Union had had unhappy experiences in their dealings with foreigners, and it was this suspicion which made cultural relations difficult. When a people feared attack from both ends of their country they could not settle down to easy relations of exchange.

The best that could be done in the present situation would be to cultivate the relations between experts in the two countries. The Soviet authorities were usually very helpful to the genuine expert. If the ASLIB Committee sent an official delegate to Moscow to exchange ideas and proposals with Soviet experts on librarianship, there would be little doubt that he would receive a helpful welcome, and would have a very instructive experience. Such organisations as the Society of Cultural Relations between the peoples of Great Britain and the U.S.S.R. could, no doubt, give valuable assistance in the arrangement of such a contact.

A contributor to the discussion was Mr. C. H. Gray, who began by referring to the rapid increase in the quality of the technical papers presented by the U.S.S.R. at the recent meetings of the World Power Conference and also of other international bodies. He referred to the University and non-University scientific institutes, listed on pages 52 to 54 of Dr. Turin's paper, and said that these lists were, of course, quite incomplete. For example, there appeared to be no mention of the institutes connected with the chemical industry, other than University institutes. Some thirty such institutes were listed in a paper presented at the Chemical Engineering Congress of the World Power Conference, in addition to no less than fourteen institutes connected with the food industry. He wished to ask two questions : firstly, what was the relationship between the University and non-University institutes ; and, secondly, was there not a risk of over-specialisation due to the formation of separate institutes dealing with highly specialised branches of science and technology ?

Mr. Gray said that so far as participation by the U.S.S.R. in international scientific and technical conferences was concerned, this was organised through " Le Comité des Conférences scientifiques et techniques internationales." This Committee

performed its functions quite well, but he ventured to suggest that it might more appropriately work under the auspices of the Academy of Sciences rather than, as at present, under the Commissariat for Heavy Industry, and as in the past, under the control of the "Gosplan" or "State-planning Commission." Mr. Gray said that this Committee might perhaps be developed so that it would act as a natural source for the dissemination abroad of all information respecting scientific and technical developments within the U.S.S.R. The centralisation of the source of supply of such information was easier as well as likely to prove more valuable than centralisation on the part of those who wished to obtain such information. At present, one difficulty appeared to be lack of knowledge within the U.S.S.R. of what contacts with other countries were already in existence: for example, the World Power Conference frequently received enquiries from Government Departments and institutes within the U.S.S.R. which should properly have been addressed to the Committee in Moscow to which he had referred.

Mr. Charles Nowell asked for more detailed information to elaborate the statistics given in the paper, and Mr. R. Brightman spoke of the difficulty in obtaining particulars of Russian publications and of the delay in obtaining copies when ordered. Others taking part in the discussion were Mr. M. Fourman, Mr. J. F. Stanley, Mr. Eric Simons, Mr. B. M. Headicar, Mr. Henry J. Jones, and Mr. E. Austin Hinton.

The Extent to which Scientific and Technical Literature is covered by Present Abstracting and Indexing Periodicals.

By S. C. BRADFORD, D.Sc., F.L.A.

It is interesting to observe that the origin of the cataloguing of printed books may be traced not so much to intellectual needs as to business necessity. The earliest known catalogues described the stock in trade of the fathers of printing who issued them. It is noteworthy also that these catalogues were in some degree classified catalogues. Thus in 1498 the elder Aldus published a catalogue of *Libri Græci Impressi* under the classes :

1. Grammatica
2. Poetica
3. Logica
4. Philosophia
5. Sacra Scriptura.

What has been described as the first bibliographical system intended for the use rather than for the sale of books was published by Conrad Gerner in 1548. Subsequently, the development of library catalogues proceeded slowly, and up to 1840 no considerable library had adequate means whereby it was possible to ascertain its resources of information on a given subject, while no large library was catalogued completely.

By that time, however, the two main types of catalogue, Author and Subject, had been recognised, and the general principles upon which the former should be prepared were illustrated in detail in the single volume of the *Catalogue of Printed Books in the Library of the British Museum,* which was published in 1841.

The superiority of the classified catalogue was recognised by librarians at a fairly early date. Thus in 1859 Edward Edwards writes in his well-known *Handbook of Library Economy,* vol. ii, p. 755, " Catalogues on this [alphabetical] plan certainly add . . . the . . . merit—at least as respects certain students—of requiring no previous acquaintance with systems of classification. But these merits have to be weighed against grave defects. Of necessity, such catalogues must deal rather with the phraseology of title-pages than with the real subject-matter of books, and therefore fail to bring under one view all, or any near approximation to all, the books they contain on any given topic. In some cases one word will have several distinct significations, and then the reader's search is embarrassed with matter foreign to his purpose ; in others one theme is expressible by several synonymous or convertible terms, and then all these must be turned to before he can be certain that he has the information of which he is in quest. As an instance of the first kind of difficulty, . . . let the reader turn to . . . [the word ESTATE] in the *Bibliotheca Britannica,* and he will find, amongst many others, the titles which follow :

The ESTATES, empires and principalities of the world . . .

A discourse of the well-ordering an honourable ESTATE . . .
A discourse concerning ESTATES, tayle and descents of inheritance.
A discourse upon grants and resumptions, showing . . . that the forfeited ESTATES ought to be applied to the payment of public debts . . .

Obviously, this word is used in these four titles in four different senses; a matter of no moment if these four titles were all that appeared; but we have only to imagine . . . a hundred other titles intermingled amongst them, and the reality of the difficulty spoken of will become sufficiently apparent."

After quoting examples of the second difficulty, Edwards concludes: "This alphabetical method is far less adapted to the main body of a catalogue than to its auxiliary index."

The issue in 1876 of Melvil Dewey's *Decimal Classification and Relative Index* marks the commencement of the modern era of library organisation, when librarians attempt to perform their dual task, firstly, of collecting the printed records of human work and thought and, secondly, of making accessible the information recorded about a particular topic.

To-day most public libraries are completely catalogued by authors, and a great many libraries have subject indexes to enable the reader to find particulars of those books in the library in which he is most likely to find the information he desires. In this development the Decimal Classification has played a preponderating part.

Coming now to the consideration of periodical catalogues of scientific papers, two of the earliest important catalogues began to appear simultaneously in 1867. These were the *Catalogue of Scientific Papers* issued by the Royal Society and the *Index to Foreign Scientific Periodicals contained in the Patent Office Library*. Most unfortunately the latter came to an early end with the volume for 1872.

It is interesting to note that the same forces seem to have been at work in the production of these catalogues as were seen in the earliest catalogues of printed books, for the Royal Society's Catalogue was arranged alphabetically by authors, while the *Patent Office Library's Index* was classified, although only by issues of periodicals. It was not until 1900 that the *International Catalogue of Scientific Literature*, also organised by the Royal Society, was issued as a subject catalogue of scientific papers.

In the meantime, the International Institute of Documentation was founded in 1895 for the purpose of promoting the progress of bibliography and co-ordinating the bibliographical activities of all countries in all branches of knowledge. This Institute adopted Dewey's Decimal Classification and created an organisation for developing it to meet all needs and keeping it up to date. The *International Catalogue* came to an untimely end in 1914, while the work of the Institute has continued to grow from year to year, and to become more truly representative of national and international bibliographical activities.

Besides these great contributions towards what might be called the organisation of knowledge as a whole, many independent efforts have been made to index or abstract the literature of various departments of knowledge. Typical of these are the abstracting journals in the different branches of science. For example, the *Pharmaceutisches Centralblatt* (afterwards *Chemisches Centralblatt*) commenced in 1830,

the *Record of Zoological Literature* in 1864, and the *Engineering Index* in 1884.

The total number of such scientific periodical bibliographies as are now current is about 300. It is a simple matter to estimate the total number of references they contain, and the total number of different papers to which they refer can also be deduced. These figures are respectively three-quarters of a million and about 280,000, giving a duplication factor of about 2.7.

The next question which comes to the mind is: how many good and very fair-class scientific and technical papers are published in a year? The answer to this question is exceedingly difficult. It is not hard to decide that there are about 15,000 periodicals current in which such papers occur. The difficulty is to choose a proper sample of those periodicals. Some periodicals contain nothing but important scientific matter. In the other extreme, some periodicals contain one good article in a year or even less. Some experts would consider an article to be of importance, others not. The statistical estimate was made by a mathematical physicist, the selection of the actual articles being made by the higher staff of the Science Library. The figure obtained was about three-quarters of a million good and very fair-class articles. The inclusion of medical subjects would add perhaps another eleven per cent.

We may, if we like, allow an error of thirty per cent in this estimate. But we must not forget that there are, besides, some 180,000 patents produced annually, and that these should be added to the number of articles to be indexed, because notices of patents occur in the ordinary indexing journals.

If we consider that it is equally likely that the estimate may be thirty per cent too small, there is not much danger of taking an exaggerated view if we say that the total number of items to be indexed or abstracted is three-quarters of a million in a year.

It will be noticed that this figure is the same as was obtained for the total number of references, and about three times as great as the total number of different papers indexed. This means that one-third of the important scientific papers published are indexed by the abstracting journals and two-thirds are missed. Truly an astonishing conclusion, but one which is confirmed by every method of approach.

We may make a very simple test in the following manner: Analysis of the 1926 edition of the *World List of Scientific Periodicals* indicated that there were 370 journals devoted to metallurgy in 1933, of which only 152 were abstracted. The proportion is a little more than one-third. It will be understood that the journals that are not abstracted are likely to be of less importance than those that are dealt with and the number of valuable articles in each of these will be less. But there are also large numbers of metallurgical papers that occur in journals that are not devoted specifically to metallurgy.

Several different simple tests were made with the same conclusions.

A more elaborate analysis was then undertaken of the indexing of the articles in Electrical Engineering periodicals, a subject that is particularly well abstracted. The estimate was made by a first-class mathematician, Mr. E. Lancaster-Jones. He found that there are altogether some 400 journals devoted specifically to Electrical Engineering, of which probably half are good and fair-class periodicals

issued regularly. Of the latter 150 were selected. The issues received day by day in the Library were examined in detail; and the total number of good and very fair-class articles in these journals was computed to be about 9,500 annually.

As a check on this estimate, the estimated output of 560 articles, in fifteen selected periodicals, was compared with the references from these fifteen periodicals cited during the same first six months of 1936 in the *Wireless Engineer*. This number was 640, showing that the Library estimate was not excessive. It must be stressed that many articles, or even small notices, are worth indexing, although they may not be worth abstracting. The *Wireless Engineer* was chosen because it makes an obvious effort to index wireless periodicals thoroughly, although it scrutinises only fifty per cent of the periodicals specifically devoted to wireless technology.

Thus we conclude that the 200 good-class journals produce about 12,500 good and very fair-class articles annually.

The remaining 200 journals include many of doubtful value, largely semi-technical and economic. These produce perhaps a further 13,000 articles a year.

The annual total is thus 25,000 articles, of which at least 12,500 are certainly of good or very fair-class.

It is safe to assume that periodicals not specifically concerned with Electrical Engineering, but dealing with related subjects, such as Physics, Transport, Power, etc., and numbering on the aggregate several thousands, will yield a further crop of articles of interest to electrical engineers, at least equal to half those produced by the "specific" journals, and, as we shall see later, probably many more than that. Besides, there are undoubtedly other periodicals of good-class, such as the *Electrical Engineer,* which are not indexed by any of the abstracting or indexing journals.

Further sources of reference are the more general periodicals, of which those taken in the Science Library yield 1,000 references annually. Additional sources are books and pamphlets, patents, standards, and manufacturers' catalogues.

In all a figure of 50,000 articles a year is certainly not too high. Of these, at least 25,000 must be regarded as worthy of indexing if not of abstracting.

Coming now to the references to these articles in the indexing and abstracting journals, there are eleven such journals specifically devoted to Electrical Engineering. These yield altogether 28,000 references. References to articles of interest to the electrical engineer occur also in indexing and abstracting periodicals devoted to General Science and Engineering. There are eleven of these periodicals, which yield about 18,000 references to articles annually on the subject under consideration. We have thus a total of 46,000 references to articles on Electrical Engineering. This figure again is comparable with the total number of articles to be indexed. The duplication factor is more difficult to determine with accuracy. In the general case it was arrived at by tracing the actual articles indexed, and the figure was checked by comparison with the number of actual journals scrutinised by each abstracting periodical. If we use this factor of about one-third, we shall undoubtedly obtain too high a figure for the number of different articles on Electrical Engineering that are indexed. The

reason for this is that the proportion of abstracting journals devoted to this subject is comparatively large. We may arrive at a better figure in the following way:

It is obvious that the duplication factor is very nearly directly proportional to the number of abstracting journals. Of the total of twenty-two special and general abstracting journals, providing the 46,000 references, eleven are classified by the Decimal Classification. From the lists of electro-technical periodicals scrutinised by them, a duplication factor of 2.5 is obtained. This agrees fairly with the general figure. Since we are dealing with the product of twenty-two abstracting periodicals, the duplication factor is very probably nearly five.

It is certain that the duplication factor is higher for the more important articles. But, to be sure of being on the safe side, we will take the figure of 4.6, which involves that 46,000 references represent 10,000 or more probably only 9,000 different papers. This is about one-fifth of the total number of electro-technical papers published and two-fifths of those that must be regarded as worthy of indexing. It will be noticed that the proportion of 9,000 to 25,000 is the same as the ratio of the original figures of 280,000 good articles out of 750,000.

If we consider also the fact that most of the indexing journals contain references to papers that belong to the class of more doubtful value, we see that this exhaustive analysis, in a subject that is particularly well indexed, fully confirms the original estimate that only about one-third of the important scientific papers are noticed by the abstracting journals.

In connection with this analysis, it is interesting to note that, if we exclude the *Deutsches Rundfunksschriftum,* which includes references to very poor quality articles in popular radio journals, no one source has more than 5,000 references annually. To trace even all those articles that are indexed needs the scrutiny of twenty-two indexes.

It is important to notice that more than 17,000 references in the aggregate are classified by periodicals using the Decimal Classification and these correspond to 7,000 different articles. To this quantity must be added references, similarly classified, which are produced by bodies such as the German Standards Department, the Dutch Patent Office and Documentation Institute, and the Science Library. Together these add another 3,000 new references. In all, therefore, some 10,000 different references in the field of Electrical Engineering, including those branches of Physics and Applied Science that are of special interest to the electrical engineer and are normally included in electro-technical reference literature, are classified annually by the Decimal Classification.

This figure, whilst falling far short of the total of 25,000 good-class articles published annually in this subject, is equal to the total number of references published by all the reference journals on this subject and double that produced by any one source. Since these references can be cut up and filed in a single cumulated index, they form the most convenient and comprehensive source of information on electro-technical subjects.

Recently the *Repertorium Technicum* has paid special attention to electro-technical references, and has increased its output to include most of the references accruing from the subsidiary, specialised, and

national indexes that use the Decimal Classification. As a result, it is publishing in a convenient, bi-monthly issue some 9,000 to 10,000 electro-technical references annually.

From the foregoing we are compelled to accept the conclusion that, at present, nearly two-thirds of the worth-while scientific and technical papers are published, only to be buried out of reach in the volumes on the library shelves.

Before concluding this paper we must endeavour to ascertain the reasons for this lamentable waste. There appear to be three main causes :

(*A*) Ignorance of the existence of periodicals specifically devoted to a particular subject, combined with inability to survey those in out-of-the-way languages. This can be remedied by the foundation of libraries with the special object of ascertaining the existence of, and acquiring, all published scientific and technical literature. This function is now being performed, so far as its resources will allow, by the Science Library.

(*B*) Adoption of a severely critical standard as to what constitutes a worth-while paper or article. Abstractors admit that, in the course of their work, they notice additional literature that is worthy of abstracting. The remedy for this difficulty will appear in the discussion of the third cause.

(*C*) Inability to survey allied, border-line, and extraneous periodicals in order to obtain scattered references.

This is a difficulty of fundamental importance, as will be seen. It depends on the fact that, to-day, every branch of science is related to every other branch. Scientific investigators work no longer in water-tight compartments. A discovery made in one branch of science may be of importance in any other branch. Modern science is one and indivisible. It follows that papers of interest in connection with a particular investigation may occur in almost any scientific periodical.

In order to determine the extent to which scientific papers are scattered in periodicals devoted to other subjects, a statistical analysis was made of the references in two quarterly bibliographies compiled in the Science Library, i.e. the *Current Bibliography of Applied Geophysics* and the *Quarterly Bibliography of Lubrication*. In addition to references prepared in the Library, these bibliographies contain notices culled from all known bibliographical sources. Thus they may be regarded as exceptionally comprehensive.

The details of the analysis were published in *Publication No.* 1 of the British Society for International Bibliography, 1934. Only the results need be quoted here.

There is a nucleus of periodicals which contain a large number of articles relative to the subject of enquiry. For example, on the subject of lubrication, the number of such periodicals is about twenty. These periodicals contain roughly a hundred articles on lubrication in the course of a year.

Besides these periodicals, there is a group of journals, dealing with related or border-line subjects, which contain articles on lubrication. The number of such periodicals is about 120. These periodicals contain in the aggregate about a hundred papers on lubrication each year, the rate of occurrence of papers in any one of the journals being about one a year.

Next to this group of periodicals, there is a larger group of about 700 periodicals devoted to less-related subjects or apparently unrelated subjects. This group contains, in the aggregate, also about a hundred articles annually on lubrication. But the average rate of occurrence in one periodical is only about one in seven years, and it may be as little as one in ten years.

Beyond these, there is a mass of thousands of periodical publications, in which papers on lubrication may occur, but so infrequently that it is impracticable to pick them up. It is, therefore, impossible to estimate the number of such papers. It may well amount to as many as in other groups. There is no criterion by which it is possible to determine whether a given periodical may contain an article on a particular subject. Nothing but search will show. And, if such articles occur, or do not occur, in a given periodical during a particular period, there is no guarantee that they will occur, or will not occur, during a different period. Scrutiny of the whole mass of periodicals is the impossible task which abstractors set themselves when they attempt to gather together all the information on a particular subject.

The law of scattering may thus be stated. If periodicals containing articles on the given subject are arranged in decreasing order of the number of such articles they contain and divided into a nucleus of journals more specifically devoted to the subject and zones of periodicals containing the same number of special articles as the nucleus, the numbers of journals in the nucleus and succeeding zones are as $1 : N : N^2 \ldots$, where N is about 5 or 6.

The cause of the deficiency of present indexes is now clear. The same difficulty confronts librarians when they set out to make a collection of literature on a special branch of knowledge. As a result, each special library tends to grow into a general library. And this has been the origin of some of the largest general libraries of science. An analysis of the contents of some of the most important special libraries in the world has shown that their contents may be divided into three approximately equal sections; comprising (1) the literature specifically devoted to their special subject, (2) an incomplete collection of the literature of related subjects, and (3) a miscellaneous and altogether inadequate collection of literature on general science and other branches of science: the books in the second and third groups being duplicated in many other libraries.

The Science Library is attempting, so far as its resources allow, to supplement the deficiencies of special libraries by creating a central reservoir, from which they may draw the literature on cognate subjects and thus enable them to concentrate on completing their collections within their proper spheres.

Reverting to the theme of indexing the world's literature of science, we realise that it is necessary to design each index as part of a whole.

We have seen that the number of index-references or abstracts published in a year is equal to the number of important papers issued. So that it would be possible, with the same expenditure of energy, to publish one reference or abstract to each scientific paper of importance, provided we could all agree to work together towards this end. When it is realised that the complete indexing of any particular subject

is impracticable by the methods so much in vogue, this general agreement must be regarded as essential.

To bring about this general co-operation, the adoption of a standard system of classification is necessary, in order that references prepared by every agency in every language may be compounded into a universal index. In addition, we must be prepared to give up the wasteful and inefficient method of picking out the articles on each special subject from the whole mass of 15,000 scientific periodicals; we must arrange, instead, that every article of importance in every periodical is indexed irrespective of its subject.

This is not difficult to achieve. Periodicals devoted specifically to a particular branch of science would be allocated to the various indexing bureaux concerned with that subject, who would undertake to index every original article in the periodicals they undertake to deal with. The bureaux would abstract the articles definitely within their scope, at their discretion, and pass to a central clearing house classified titles of the articles not directly within their purview. The classification of the articles they abstracted would be done accurately by the experts working in connection with the bureaux. The classification of the articles that were only catalogued need not be detailed. The titles would be written on slips of uniform size, so that they could be arranged in classification order by unskilled staff at the clearing house. These titles would then be redistributed to the appropriate bureaux, according to the subjects indicated by the rough classification signs inscribed on them. In this way each bureau would receive notice of *every* article published which came within their scope, and this without the present wasteful expenditure of energy in scrutinising the whole mass of scientific periodical literature. On receipt of the catalogue titles, each bureau would decide which papers were worthy of abstracting. If possible a classified index of the remainder should be published.

After allocation of periodicals on special subjects according to this plan, there would remain a number of periodicals whose scope was too general to be undertaken by any specialist bureau. These periodicals would have to be indexed by institutions of more general scope, such as the large libraries of science possessing highly qualified personnel.

As a contribution to this scheme, the Science Library now indexes, in its *Weekly Bibliography of Pure and Applied Science,* every original article in a selection of some 150 scientific periodicals of more general scope. Abstracting agencies may rely on this bibliography to bring to their notice all papers within their scope occurring in these periodicals, of which a list is published.

There is at present one classification, and one only, that is sufficiently extensive and flexible for use in such a scheme. This is the Universal Decimal Classification of the International Institute of Documentation. In the Science Library all bibliographies that employ this system are cut up, mounted on cards, and incorporated in an index, which comprises, at the present time, two and a half million references, and is growing at the rate of 150,000 references a year. In such an index all references to one subject fall together under the same classification number irrespective of source or language, and the time of search is reduced from days or weeks to a few moments. It may be worth while to record that the cost of the *Subject-Matter Index* in the

Science Library is only about £300 a year, including material and labour.

These references correspond to about 120,000 different articles out of the aggregate of 280,000 articles catalogued by all the world's publishing bibliographical agencies. The number of references is slowly but surely increasing. Arrangements are now almost completed, which will add another 100,000 references annually to the index and bring the annual total to a quarter of a million cards.

I must apologise for the length of these remarks. They provide but a brief *résumé* of the work that has been done on the subject. Those who have been able to follow these tedious figures will realise, at least, that the present state of scientific bibliography is far from satisfactory, and that a better service can be achieved only by recognising the essential unity of science, and by the agreement of bibliographers to co-operate in the single aim of providing a uniform index to recorded information.

DISCUSSION.

The Chair was taken by Mr. W. Macnab, who had been asked at short notice to take the place of Mr. T. F. Burton, who found himself at the last moment unable to be present. The following discussion on the paper by Dr. Bradford entitled "Abstracting Services: How Far Does the Present System Cover Scientific Periodical Literature" took place.

Mr. H. Rottenburg said that many people failed to realise the vital nature of the subject which had been discussed in Dr. Bradford's paper, and which may, indeed, be considered to lie at the root of the continued existence of this country and this empire. Once before ASLIB had put forward in this very college a plea for the complete indexing of all literature—not only the scientific literature. Among those present at that meeting was a member of the Royal Society, who stated that the Government was not prepared to support such a scheme. Another member present at that meeting gave it as his opinion that such an index might be of sufficient importance to turn a defeat into a victory in a future war. The present speaker wished to support this view with some instances which had come to his own attention. In 1923 such was the lack of knowledge of the existing literature that the mathematics of aerofoil design were not then in Britain in advance of the Russian knowledge of this subject before the War. As a second instance he wished to cite the case of the production of glycerine. In the days of the War the strategy of the Allied Armies was based on the supposition that the enemy would exhaust the fat supplies from which glycerine was produced. Had the literature on the subject been properly accessible, it might have been made known to the Allied command that a method had already been described in a certain paper for the production of glycerine from sugar. Germany was in those days, in fact, already producing glycerine from sugar. A more recent instance was brought to light in a paper read before the Institute of Electrical Engineers on the subject of wireless, when one of the members taking part in the discussion pointed out that the paper had omitted all reference to an earlier published research, of which the authors were presumably not aware and which had an important bearing on the subject of the research.

The speaker thought that ASLIB was in a position to arouse the interest of people who are not necessarily technically interested. The subject is not an academic one but one of general interest. In conclusion the speaker thought the Meeting should express its gratitude to Dr. Bradford and to the Science Library for the valuable work which they were doing in this fundamentally important subject.

Dr. S. E. Holmstrom suggested that the proper use for abstracts was for reconnaissance, i.e. as a means to survey what is of interest. Abstracts should not be considered as designed to transmit knowledge but to afford awareness of the location of knowledge. Abstracts must be regarded as unrivalled by indexes, and hence the speaker wished to emphasise the fundamental importance of rationalising and co-ordinating the production and scope of abstracts.

Turning to another aspect of the question, Dr. Holmstrom thought that the answers to questions would be of value. The first question was what proportion of

the cost of abstracting is represented by the actual cost of preparation of the abstract (or of translation of existing abstracts) and what proportion is represented by the costs of printing and distribution. The second question was the relative proportions of two types of users of abstracts which, he suggested, exist: those using abstracts for current reference to keep themselves *au fait* of up-to-the-minute developments and those using abstracts for the purpose of referring back, usually in connection with *ad hoc* enquiries. Into the second class come the writers of books and those seeking knowledge on a particular point, who use abstracts as a means of collecting the available relevant literature. The abstracts being prepared at the present time meet the needs of the first class of user but are inconvenient for the second class, since a search of the indexes of abstract journals is necessitated. Dr. Holmstrom suggested that if the proportion of the two classes of users could be estimated and if the second class of user were found more important then those responsible for and concerned with abstracting should give predominance to the needs of this class of user and subordinate the needs of the first class of user. The financial resources available should be similarly apportioned and nearly all the money should be spent on the preparation (not the printing) of abstracts, which could be kept in manuscript form. A master index could be kept of cards giving brief abstracts and classified under the Decimal System. A means could readily be devised for making reprints if and when required. As an example he would like to suggest the use of addressograph stencils either of metal or composition, or possibly a copy could be typed on tracing paper for blueprinting. If, however, it was found that the first class of user, i.e. the current reader, predominated, he thought the present system of printing, etc., should be continued and in this case he would suggest one simple means to help those keeping abstracts, i.e. the adoption of one-side printing.

The speaker offered his congratulations to Dr. Bradford for his very illuminating paper.

Professor Hutton expressed himself as very interested in the work done by Dr. Bradford and his staff. At the same time he was afraid that many of his friends hesitated to accept Dr. Bradford's opinion about " squared sections."

The scope of the work under discussion is enormous, but the speaker pointed out that continuous progress was evident in so far as abstract journals and the proportion of material dealt with by the abstract journals were concerned. The time factor is of great importance in abstracting and in this connection he would like to endorse some of the remarks made by the last speaker. The possibilities of a rapid survey of the literature under a co-operative system remained to be discovered. The ideal solution would be to centralise in one single library possessing the greatest collection of scientific literature—for example, the 15,000 journals gracefully accepted by Dr. Bradford as containing good and very fair-class scientific and technical papers—and to index and analyse all the articles, whether in the n or n^2 categories, and to arrange distribution to the special organisations.

A half-way house would be to establish both such a central organisation and individual organisations concerning themselves only with journals in the n and n^2 categories.

Professor Hutton took the opportunity of raising a subject of cognate interest. Many abstracts at the present time are not adequately synoptic and only deal with the aspects of the original paper of interest to the specialist body publishing the abstract journal. He would suggest that the system of truly analytical abstracts as advocated by Dr. Fulcher and published by the National Research Council, U.S.A., be adopted.

Mr. E. Carter wished to make one or two remarks in elaboration of the points already raised by Dr. Holmstrom and Professor Hutton. He pointed out that at the present time no abstracting service deals with a problem which is of vital importance to the Building Industry, namely, the abstracting of building planning. The characteristic demand in architectural information service is not for scientific abstracts but for a classified and very up-to-date record of planning experience. Such a record would entail the recording of the plans of buildings. At the present time information which may be available regarding any particular building in this country or in the world is completely inaccessible since it is unrecorded. For the achievement of the service he had in mind, a publicity campaign was urgently required. The speaker thought that the immediate need of architecture is to make the profession aware of the sources of information, which is at the present time limited to scientific information.

Mr. B. Fullman asked Dr. Bradford how he derived the figure given in page 3 of his paper, where it is stated that " there are three hundred and seventy journals

devoted to metallurgy, of which only 132 are abstracted"? Mr. Fullman was anxious to know how this figure of 132 was arrived at.

Mr. H. H. Johnson declared himself as entering into the discussion with some diffidence as one interested in the remarkable analysis made by Dr. Bradford. He asked: "What is one going to do?" He would support the idea mooted by Professor Hutton in connection with the centralisation of abstracting and he would suggest that for three reasons the D.S.I.R. might be a more suitable body to undertake the organisation of such a system. In the first place this body is substantially supported by Government money; in the second place it is not directly under the control of any Ministry; and in the third place it already publishes two abstract journals. With regard to the extension of the scheme on an international basis he thought that the matter of essential importance was to start some scheme in this country, when undoubtedly other countries would be willing when they became interested to affiliate their existing organisations or plan some form of co-operation.

He wished to inform the Meeting that the missionary work had already been started. Preliminary negotiations had already been entered into with the D.S.I.R. in connection with the abstracting of engineering subjects and he could say that there were prospects of something being done.

Mr. S. J. Astbury said that from his limited experience he held what might be regarded as unorthodox views. He was not alarmed by the volume of unabstracted work. It was his opinion that good work is covered by a very limited group of first-class journals and he felt that the abstracting bodies were well aware of the position.

In reference to a question which had earlier been asked about the relative costs of publication, distribution and preparation of abstracts, he could state that the publication and distribution cost one and a half times or twice as much as the actual preparation.

In his opinion the abstracting should be limited to dealing with the cream of the literature. Ten years ago his organisation gave up the attempt to do "complete" indexing. It was found that good abstracts of good papers were far more valuable than a cumbrous index embracing every paper.

Mr. H. Jones asked whether Dr. Bradford could give any indication of the quality of material in the n^2 category of paper.

Miss E. W. Parker enquired whether there exists a list of papers in the second and third categories for metallurgy.

Mr. J. G. Hall referred to Dr. Bradford's statement that there were 300 abstracting journals and asked if there were any list of these available.

In replying to the discussion, Dr. Bradford said that he thanked Mr. Rottenburg for emphasising the urgent necessity of organising a complete index of the records of discovery and invention. As Dr. Holmstrom had pointed out, at present abstracts were designed to be used for current reference rather than for ascertaining what work had been done on a particular subject irrespective of date. They could be made to serve this purpose by the simple process of adding to each abstract its Decimal Classification number or numbers. This would not increase but rather diminish the cost of production, as the indexes, both annual and decennial, would involve no further skilled labour. Abstracts classified in this way, from whatever source, would fall together automatically by subject, providing a bird's-eye view of the progress of each subject and references to the original literature. Dr. Bradford was of the opinion that the scientific public would not be willing to do without the publication of abstracts.

Professor Hutton's suggestion was valuable, that abstracts should be made more truly analytical, rather than being prepared, as now, from a single point of view. This would reduce the need for duplication and free labour for abstracting additional papers. To prepare a complete index to scientific papers, which should serve as the basis for the preparation of abstracts, was not impossible of achievement. It would need a staff of perhaps fifty qualified indexers, with additional supervising posts. Together with the cost of publication, the expense would be considerable. Before undertaking such a scheme, it was worth while to consider whether the same thing could not be achieved with less expense by the collaboration of existing abstracting organisations, using a standard system and undertaking to catalogue all papers not abstracted in groups of journals allotted to them as suggested in Dr. Bradford's paper. Failing this, the alternative would become imperative.

In reply to Mr. Fullman, the figures respecting metallurgical journals were obtained from the *World List* and the journals scrutinised by the various abstracting journals. The figures referred to journals purporting to deal with metallurgical

subjects alone. Three hundred and seventy metallurgical journals was not small as compared with only five hundred odd journals of the whole of chemistry, which were abstracted by Chemical Abstracts.

As Mr. Johnson said, the task of providing a complete index must be tackled. The method has been indicated. Science must be regarded as a whole and indexes must be designed to fit together. If all those engaged in the production of abstracts and references to literature would adopt this principle, the index would evolve itself.

It is important to observe that, as stated in the Report of the Advisory Council of the Science Museum for 1936, both the Advisory Council and the Royal Society, in 1932 and 1933 respectively, recommended to the Government the development of the Science Library as a National Science Library with functions which included the maintenance of a complete index of all published scientific literature and with a staff qualified to supply information on particular subjects.

In answer to Mr. Astbury, Dr. Bradford pointed out that his figures applied only to articles selected by experts as being worth indexing. It was not the journals but the articles that were distributed according to the $1 : n : n^2 : \ldots$ law.

The whole object of the elaborate statistical investigations reported in this paper is to prove beyond any question that quantities of important scientific papers are neither abstracted nor indexed. This is one of the main reasons why so much time and expense is being wasted in duplicating previous work. The other main reason is the adoption of archaic alphabetical methods of indexing, which hide the information and prevent it being found. The adoption of standard methods would go far to remove both these defects.

This also answered Mr. Jones's question and Professor Hutton's reference to the squared sections.

In reply to Miss Parker [communicated], there is no list of periodicals not abstracted; the analysis was made on the basis of samples. Preliminary work with a view to listing journals not abstracted has been begun. Most abstracting bodies have been very helpful in supplying lists of the periodicals they scrutinise. Difficulty was caused by the inability of a few bodies to supply such lists. The work of co-ordinating the replies received is very considerable. If this can be completed it will be possible to compile a list of the periodicals that are overlooked. The new edition of the Hand List of Current Periodicals in the Science Library, containing nine thousand items, is in the press, and should be of considerable assistance to abstracting organisations by indicating additional journals for scrutiny.

A list of three hundred abstracting periodicals in the Science Library has been compiled, and a copy would gladly be sent to Mr. Hall.

The Chairman, Mr. McNab, before closing the Meeting, remarked on the interest and stimulus of Dr. Bradford's paper and the discussion to which it had given rise. The latter had given expression to the ideal which must be kept in view. The subject is one of first importance, since it is essential that this country should be kept in touch with what is being done elsewhere. He considered that it would be a great mistake if greater use were not made of the existing organisation in the Science Library for elaborating any scheme for centralisation.

Communicated by Mr. B. Fullman and Miss E. W. Parker:

"In further correspondence with Dr. Bradford we have been informed that the figure of 370 metallurgical journals was statistically *deduced* from the *World List* of 1926 and *calculated* to 1933, and that the names of the 152 journals were culled from the lists of *some only* of the more important abstracting bodies. The purely statistical and, moreover, incomplete nature of the methods by which these figures have been computed should be borne in mind in assessing their value and their applicability to present conditions.

As a matter of practical interest we would point out that a preliminary survey of the *current* abstracting lists of *Chemical Abstracts* and *Chemisches Zentralblatt*, together with particulars of the Institute of Metals abstracting service, reveals that more than 200 *purely metallurgical journals** are now regularly surveyed by these three organisations. We consider it highly probable that when all available information has been obtained from other abstracting bodies, the figure of 200 will be materially increased."

In reply to the contribution by Mr. Fullman and Miss Parker, Dr. Bradford writes:

"The criticism of method implied in their contribution cannot be admitted.

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* This list of these journals is available for inspection.

It would seem to indicate that they have not fully understood the method of statistical analysis.

The analysis took full account of the abstracting journals at the period when it was compiled. Naturally a greater number of metallurgical periodicals are abstracted in 1937 than in 1933. The number of periodicals specifically dealing with metallurgy will have increased also, owing to the modern tendency towards nationalism in publication.

The only way to prove that the abstracting of metallurgy is better than that of other subjects would be for Mr. Fullman and Miss Parker to undertake a complete analysis of the abstracting of such periodicals, in the same way as Mr. Lancaster-Jones has performed this task for the subject of Electrical Engineering. But there is no reason whatever to suppose that the analysis would yield essentially different results."

The Public Relations Officer.

By Lieut.-Col. E. T. CRUTCHLEY, C.B., C.M.G., C.B.E.

I cannot help feeling that I am addressing you to-night under false pretences. Mr. Ridley, in suggesting to me that "The Public Relations Officer" would be a subject of interest to members of this Association, went on to say that it was essential that the subject should be handled by one who was an undoubted authority on it. I was not proof against this subtle bit of flattery. And that is where the false pretences come in, because having held that position in the Post Office for under two years I am at first glance certainly not qualified by length of experience to pose as an expert. But an interesting thing happened to me the other day which suddenly demonstrated to me two important facts. I was talking to Mr. Rawdon Smith, who is my opposite number at the London Passenger Transport Board, and I asked him if he could help me in finding a nice crisp definition of the duties of a Public Relations Officer. He replied, "His principal function is interpreting his undertaking to the public and the public to his undertaking." Now it happened that before I was appointed to my present post I had the honour for several years of representing the British Government in Australia, and when Mr. Rawdon Smith gave me this definition it leapt to my mind that on one occasion, when I was asked by a pressman at Canberra to define my duties as British Government Representative, I had replied that my chief duty was "the interpretation of the United Kingdom to Australia and the interpretation of Australia to the United Kingdom." The coincidence was remarkable and it told me in a flash two things: firstly, that I was not such a novice at Public Relations work as I had imagined—a very comforting thought to have in facing you to-night—and secondly, that the Public Relations Officer is no new invention, as he is so often said to be, but is, in fact, under various synonymous titles a very old institution indeed. There are many Public Relations Officers to-day who scarcely realise it. Your President, for instance, Sir Harry Lindsay, as Director of the Imperial Institute is one of the greatest of them—constantly projecting knowledge which is of profound importance to the future of the Empire.

The Public Relations Officer is above all things concerned with contacts. "Public relations," says "P. E. P." in a valuable presentation of the subject, "may be defined as covering all the contacts between an official organisation and all other bodies with which it may have to deal, directly or indirectly, otherwise than through internal administrative channels."

The term connotes, at all events in its application in this country, a courageous expansiveness which takes the place of that timorous reticence which used to be characteristic of the official mind, a reticence which found expression in unintelligible forms, incomprehensible blue books, and other such dialectical smoke-screens. It suggests, in place of fog, fresh air and long views. The term "Public Relations" comes from America, and as it has caught on let us abide by it. It

certainly conveys an impression of two-way traffic; it implies both the interpretation of a Government Department or an undertaking to its public, and the absorption of the views, prejudices, and criticisms of that public by the Department or undertaking. "Projection," "publicity," "persuasion," and "advertisement" are essentially one-way traffic terms and therefore not entirely adequate.

Let us look at Public Relations first in its "outward traffic" sense—the interpretation of the Department to its public. Just as that very word "Interpretation" stands for something different from, and much wider than, what is indicated by the word "Advertising," so the term "Public Relations" in its accepted sense means something wider than "Publicity." The ultimate objective of the Public Relations Officer and the Publicity Manager may be the same, their appeal may be to the same people, but the appeal of Publicity is visual and direct while the appeal of the Public Relations Officer—or the Chief Interpreter as he might be called—is essentially psychological. Yet the two functions cannot be regarded as separate, for in fact they are complementary. The immediate object of the Public Relations Officer is to supply background, to cultivate understanding, confidence, and good will towards the undertaking or authority which he represents, and the immediate object of the Publicity Manager is to take advantage of the atmosphere thus created by driving home, as it were, with a directness which must vary with circumstances, the merits of the particular commodity which the undertaking has to sell, be it transport, gas, telephones, dock facilities, or a housing or physical culture scheme. This delimitation of functions, however, is by no means finely drawn. There must constantly be an overlap of functions and a merging of means to the common end.

Behind the Publicity man again comes the Sales Representative and his direct contact with the potential customers. If the other two people have done their work effectively he will at least probably not have the door banged in his face; and once he is received without suspicion and with a smile of good will his task is immensely lightened. The closer these three can work together the better for the undertaking they serve.

I must not, however, indulge too freely in the metaphors of commerce because I am concerned to-night mainly with the Public Relations Officer, and while he is to be found on the establishment of certain big trading undertakings, especially in America, his functions are, as I visualise them, more necessary, and more appropriate, to such organisations as public utilities, local authorities, and Government Departments. He fits into the selling of services rather than into the selling of commodities.

Probably I can best give you an impression of the origin, the scope, and the potentialities of the Public Relations Officer by dealing with him in relation to my own Department. I do this with some diffidence because I realise that the Public Relations Officer in his modern form still sails in a sea which is comparatively uncharted. But I submit that the Post Office has adventured as far as most Departments or authorities in its exploration of this particular sea and, although it has perhaps occasionally struck a rock, it is on the whole making progress and, that being so, its adventures should be a useful guide to others.

Until a comparatively few years ago the Post Office, like every other Department of the Government, did good by stealth and would have blushed painfully to find it fame. It was never put to the pain of blushing, however; nobody loved it; it got more kicks than ha'pence, or at least the more ha'pence it tried to earn the more kicks it got. There was on the one hand a prejudice against it as a dangerously growing example of Government enterprise, savouring of socialism. On the other hand, there was among Post Office people themselves a defensive silence, the traditional aloofness of a Government Department, the feeling that the Post Office was practically a monopoly and that everyone had to come to it whether they liked it or not—so why worry? Public criticism came to a head in 1932 when a petition was presented to the Government signed by 320 of its own supporters in the House of Commons. The petitioners urged, putting it bluntly and briefly, that the Post Office was so bad that its functions should be handed over to a public utility company or to some body constituted on the lines of the Electricity Commission or the B.B.C. A Royal Commission was appointed and reported against this project but, at the same time, recommended certain changes both in the basis of Post Office finance and in its internal administration. Thus daylight was let in, the atmosphere was cleared, " the giant woke up "—to use an attractive metaphor applied to this very occasion by Sir William Crawford—and an active policy of Public Relations was born.

It was long overdue, and is still more overdue to-day in some other Departments. Parliament was till a few years ago by tradition the sole and sufficient channel of communication between departments of the Government and the public they served. This tradition had survived from the time when speeches in Parliament were fully reported and when the franchise was limited and education meagre. With the passing of years, however, with the vast extension of the franchise and the rapid growth of education, Parliament had become inadequate as a means of interpreting the Government's actions and intentions. I believe that Hansard still has some public sale, but how many of us read scrupulously those debates on public affairs which we really ought to read as being pertinent to our national progress and our individual well-being? And how many newspapers give us more than selected and well-spiced scraps from the Parliamentary table? The answer in both places is—precious few.

So when this new policy was born at the Post Office, when it changed a reluctant attitude of defence to one of eager exposition, the Department not only found fertile ground to cultivate but, to the manifest surprise of the old school, met with rewards almost as embarrassing as Jack found the Beanstalk.

From the day when the new policy was set in motion by Mr. Attlee, then Postmaster General, it has been the aim of the Post Office to explain itself and every detail of its working to the public which it serves. I recall a drawing in *Punch* by Phil May many years ago showing a blatant cockney visitor to a battleship anchored in one of the home ports and open to inspection. " I want to see the captain! " says the visitor as he comes over the side. The midshipman of the watch is mildly amused at this piece of sacrilege and facetiously asks: " What name shall I say, sir? " " Just tell 'im it's one of the owners! " is the reply. That reply typifies exactly the attitude which

the Post Office began to invite from its customers, who comprise the whole population of the country. This revolutionary development of relations with the public involved far-reaching changes of practice and the setting up of a new organisation at Post Office Headquarters which was to make its influence felt in every corner of the country. For it was quickly confirmed that the public *wanted* to know. It manifested a direct and very active interest in the working of the great Department which enters so largely into its daily life, and the more information it received the keener grew its appetite.

A Publicity section had been created by Mr. Attlee, and this was considerably enlarged when Sir Stephen Tallents was chosen by Sir Kingsley Wood for the task of fashioning the new organisation and projecting the Post Office to its public. He had been engaged on similar work for eight years for the Empire Marketing Board. I well remember reading, while I was in Australia, the successive reports of the Board, and marvelling not so much at the very material results achieved in the growing sales of Empire products in this country as at the smooth indirect channels by which the doctrine of Empire trade flowed from an office in Westminster and gradually permeated the whole of this country to achieve the desired result—it was all a very fine exercise in applied psychology. I need hardly say, therefore, that when to my complete surprise I succeeded Sir Stephen Tallents as Public Relations Officer to the Post Office, after he had held that post for two years and passed on to the B.B.C., I found that the New Spirit was in full possession and the attitude of the public to the Post Office becoming more and more satisfied, happy, and appreciative. The change from the old days was remarkable—even sensational.

Before I try to describe the Public Relations of the Post Office as they are to-day let me repeat that in most of its services the Post Office is a monopolist. The Parcel Post and the Savings Bank are exceptions, but in the other Postal Services, in the inland Telegraphs, the Telephone system, it has no rival to compete with. So it is not handicapped by the necessity of demonstrating that its postage stamps are the easiest to lick or that its telephones provide fewer wrong numbers than somebody else's. There has been no need for it to adopt the methods of high power salesmanship. It simply has to explain and demonstrate its services to its actual and potential customers. And, conversely (and here we come to the "Inward Traffic" movement), it has to invite, and indeed grope for, the public reactions to those services and adapt them where necessary to meet the public taste and requirements.

For the work of explaining itself and recording its activities the Post Office has obtained the cordial co-operation of the Press. The prim announcements which were formerly the only sign of departmental life discernible in the newspapers take up only an infinitesimal part of the space which to-day is devoted to the Post Office. It was suggested at the inauguration of the new policy that the doings of the Post Office were news, as indeed are the doings of any Department of Government, any Local Government Authority, any big undertaking which gives public service. The suggestion was eagerly accepted by those whose duty it is to purvey news. They had not been aware of the exciting things that take place almost daily in this

great service, and they were only too glad to hear about them. The result is that I defy you to take up your newspaper without finding something about the Post Office. A picturesque account (with picture) of a novel way of laying a telephone cable across a Scottish loch, the ceremonial send-off from Southampton of the first " all-up " Empire Air Mail, the story of the first burglar caught by dialling 999—the new telephone alarm signal—the design of a new "greetings" telegram—these are a few recent items that come to my mind. We welcome such " stories " as having an importance of their own in making known the Department's services and promoting its prestige, and it may be taken for granted that the moment these stories cease to be news and fail to interest the public, the newspapers will cease to look for them and publish them. At the present time there is a constant stream of reporters at the General Post Office—and at provincial post offices as well—seeking information on day-to-day developments and events, and every possible step is taken to satisfy their needs. Experienced officials are specially appointed for that purpose. The result is appreciation and good will, but, let me add, a sharpened sense of criticism when there is something which really calls for criticism. That is as it should be. Informed and reasonable criticism is welcomed. Public Relations would obviously be incomplete without it.

The Public Relations Department of the Post Office is divided into three divisions : Press Information and Publications ; Publicity ; and, thirdly, Sales. Salesmanship is a wide and distinct subject which I do not propose to touch to-night. The close liaison with the Press which I have just described forms the principal function of the Controller of Press Information and Publications. He also has the management of the *Post Office Magazine*, a publication with a circulation of 180,000, almost entirely among the staff, and periodical publications known as Green Papers, describing various sections of Post Office work. All these publications have as their objective to please and interest the staff and acquaint them with the general life of the Department and with those sections of its work of which they may not have first-hand knowledge. Such objects have a definite and important part in a Public Relations policy.

The Controller of Publicity covers a wide field. Firstly, he deals with Press advertisements. These are generally connected closely with the products of one or other of the services—there is a periodic campaign to extend the telephones, to encourage the sending of " greetings " telegrams, perhaps, or to call attention to a new mail service. The Controller of Publicity is now responsible for the administration of the G.P.O. Film Unit and for the display of its output. He arranges, with the co-operation of the Office of Works, the various exhibitions which we are constantly holding in various parts of the country. He is responsible for the production of what I may call " visual " publicity generally—the " prestige " posters which are sent out to 28,000 schools and exhibited in post offices, in place of the commercial advertisements which, until recently, occupied the wall space, those other posters which have a definite " selling " appeal, the leaflets which are issued by the million and largely circulated by direct mail, and the numerous booklets on various subjects. With all of these instruments of publicity I have no doubt this audience is

to some extent familiar (if not, it is clear we still have fresh fields to conquer).

In the preparation of this material, the Post Office calls freely upon the arts to help in the interpretation of its services. Some artists have caught at once the spirit of the Post Office, sometimes more readily than the Post Office has caught and assimilated the spirit of the artist. For the official, trained to intense precision, is sometimes not easy to convince that a conception which attracts by its beauty or originality need not necessarily be photographic or literal in the detail of its representation. This conflict of views is a common experience for the Public Relations Officer. The Post Office, which realises that it by no means knows all that is to be known about the best methods of self-interpretation, enjoys the advantage of having distinguished groups of expert advisers who help, quite voluntarily, in the direction of its publicity. There is also close association with the Royal Fine Art Commission, the Council for Art and Industry, and various bodies interested in the preservation of the beauties of the countryside. So with all this valuable help, if we *do* go wrong and if we fail to reach our objective, it is not for want of taking advice and pains. And one reason for the measure of success which I think we have in fact achieved is that we leave a substantial margin for experiment. We are able to try out new men and new methods and novel angles of vision and approach, and we feel that this is a policy which leads to progress.

Nowhere has this liberty to experiment had more notable results than in the G.P.O. Film Unit. For four years under the direction of Mr. John Grierson, aided by Mr. Cavalcanti and Mr. R. H. Watt and a body of young enthusiasts in the art of film production, the G.P.O. Film Unit has contributed in a most distinguished manner to the interpretation of the Post Office to its public. And we of the Post Office are justly proud that in rendering those services Grierson and his group brought the filming of actualities, the " Documentary Film " as it is irritatingly called, into high repute in this country. Grierson was with you last year, and in the paper which he contributed to your proceedings he recorded how in the film " Night Mail " this liberty to experiment had given an opportunity to enrich the sound structure of cinema by bringing in the composer and the poet. The result was that an everyday incident of Post Office routine, the journey of the Down Special Travelling Post Office as it is called, from London to Aberdeen, which has been going on for a hundred years without anyone being in the least aware of it, became suddenly alive and was projected into the public consciousness in a film of dramatic power and singular beauty.

Film production is one thing—film display is another. The organisation of distribution and exploitation is, of course, vitally important, and that is where my friend Sir Harry Lindsay comes in. Among his many activities as Director of the Imperial Institute he runs an Empire Film Library, and with it the G.P.O. Film Library.

The Empire and G.P.O. Libraries together probably afford the largest distributing centre for non-theatrical films in this country. The progress made in recent years in the educational use of films is very largely due to the free service afforded by our Chairman's keen efforts. The association of the Post Office films with the Empire

Library ensures for them a ready access to all those schools, churches, societies, clubs, and other bodies which have projectors of their own, and the number of these is steadily growing. The films in this joint Library were seen by nearly five million people last year. Further development depends mainly on the supply of new films. The Post Office side is being added to as quickly as possible, and I understand the Dominion Governments and other Empire bodies are co-operating with Sir Harry Lindsay in building up the Empire side. The Overseas Empire is, in fact, more "Public Relations"-minded than the Mother Country. The Projection of England to the Overseas Dominions and to foreign countries is sadly behind.

In addition to the display arranged through Sir Harry Lindsay's organisation the Public Relations Department tours the country with its own projectors. By this means over 1,300 shows have been given during the past year to nearly 200,000 school children, to whom the Post Office has been interpreted in connection with their study of "Civics." Next year I hope that many more of the rising generation will have by this means the opportunity of acquiring some understanding, and some appreciation, of a public service which will take such an intimate part in their future lives. Among the several definitions of Public Relations with which I have peppered this discourse I have included "the supply of background." These film displays furnish, I think, a good example of what I mean. The Post Office films are also exhibited to the staff whenever and wherever opportunity offers. Such displays serve the same purpose as the Magazine and other publications to which I have referred. They stimulate the interest of the staff in the general working of the machine, and so have an indirect but important bearing upon the relations of the Department with the public.

The answering of enquiries is, I need hardly say in this company, a most important branch of Public Relations, and it is a subject to which we are at the present time giving increasing attention. No field is more fertile in good will than a good information service. The Post Office has a system of enquiry bureaux for its individual services. The system of dealing with Telephone Directory enquiries, to take one example, is constantly being developed and improved to meet the steadily increasing demands upon it. The technical details of this system would probably be of interest to this Association. I cannot deal with these details but one of our Green Papers deals with the subject; I have no doubt it is in your library, but I shall be glad to send a copy to any member who may be particularly interested. There are nearly 100 bureaux throughout Great Britain and Northern Ireland for dealing with these directory enquiries alone.

Other services have their special enquiry points, but for a large percentage of the population the normal way of seeking information is to make enquiries at the counter of the local head post office. Now there is something mildly intimidating about a counter, at least that is my own feeling, speaking as one who delegates as much of his shopping as possible to the female members of his family. Whereas in a modern bookshop, where one can wander around unrestricted by barriers, I am perfectly happy. So, in deference to this psychological theory, our aim is to include in new Post Office buildings, wherever possible, and in existing buildings as opportunity offers, a comfortably

furnished room, with comfortable chairs to sit on and pleasant things to look at, where the public, reluctant perhaps to trouble a busy counter officer, can seek and obtain the information they want without feeling that they are being a nuisance. And there are, of course, facilities for getting this information by telephone wherever the demand justifies it. We are planning at present a central bureau for London where enquirers after general information about Post Office services will, by dialling a special code, find themselves in direct touch with someone who can satisfy them. Let me hasten to add that this bureau will not be ready for two years or so.

May I now take one current Post Office topic and show the various ways in which the public is persuaded to absorb and appreciate it—show, in other words, " Public Relations " at work upon it with all its force.

The topic is the new Empire Air Mail scheme, the first stage of which, affecting the mails to South and East Africa, was inaugurated a couple of months ago. All first-class mail matter for South and East Africa is now sent by air. There is no option, and for some twenty per cent of the letters posted the cost is higher than it was, because the new rate of postage is $1\frac{1}{2}d.$ per half ounce. The public have to be convinced of the compensating advantage of very rapid transport and also, since the space in the flying-boat is, of course, limited, they have to be persuaded to post their letters day by day instead of on Thursdays only. This was an interesting task—far different from merely increasing the sale of goods or services—and, thanks largely to the good will which had been established beforehand, the public seem to be settling down to the new order of things and accepting with very good grace the necessary changes in long-established habits. Incidentally, " Public Relations " will have to continue at this particular task, because in a month or two the Indian mail becomes, as we call it, an " all-up air mail," and again next year the scheme is to be extended to Australia. A good deal of money has been spent on advertising the requirements of the new scheme in the newspapers, but we do not depend, of course, entirely on newspaper advertising to achieve the desired results in a matter of this magnitude. Every form of persuasion is brought into play. The Postmaster General and the Assistant Postmaster General use the opportunities which normally fall to Ministers, every individual representation and complaint and every Press comment is carefully studied and promptly dealt with, the Press is kept informed of each development, posters are exhibited in every Crown post office in the country, leaflets are distributed by the million, and later on the Post Office's own Film Unit will be brought in to help with a special film. But one of the most helpful factors in this and similar big campaigns is found in the close relations which have been set up between the Post Office and the various Chambers of Commerce and similar business organisations up and down the country. The cultivation of these relations has been one of the main objectives of the modern Public Relations policy of the Post Office, and the immense value of the co-operation established has been proved over and over again. It is very largely through these Chambers of Commerce and Trade, and the special Postal Advisory Committees which have been set up in various important centres, that we obtain the impressions from outside which are so

valuable to the Public Relations Officer—the public reactions to our services and the suggestions for their modification or extension.

I hope I have not been too domestic in my endeavour to account for, and describe the scope of, a Public Relations policy as adopted and partly—only partly—developed by a big State Department.

To sum it all up: On the one hand, the public to-day have a strong and legitimate curiosity about the machinery of government and the details of public service of all kinds. On the other hand, every Department, every local authority, every public utility corporation, desires, or should desire, to satisfy that curiosity, because it is obviously to its advantage not only to encourage the use of its services, but also to get them used in the most intelligent manner. The Public Relations Officer is the man who sees that the demand and the supply are brought together by the dissemination of information, and by the establishment of outside contacts which will help towards efficiency and smooth working. He has at his disposal an often unsuspected wealth of material and all the modern means of communicating it—he has the spoken word, he has the Press, the air, exhibitions, lectures, posters, books and booklets, and lastly the cinema, the possibilities of which have so far only been lightly tapped. And he has, as a rule, at his beck and call a wealth of representative organisations (like the Chambers of Commerce in the case of the Post Office) all anxious to give him constructive advice and practical help. The growing impetus of the new movement which is focussed in the Public Relations Officer makes it a subject which I submit is well worth the interest of this Association, and I shall be happy if my remarks to-night serve in the slightest degree to stimulate that interest.

DISCUSSION.

The Chairman, Sir Harry Lindsay, in introducing Lieut.-Col. Crutchley, said that he had successfully followed Sir Stephen Tallents, and that his previous service as representative of the British Government in Australia, and in other parts of the Empire, had provided him with experience of value in his present position.

On the conclusion of the paper, the Chairman said that Col. Crutchley in choosing his own field to illustrate his subject had demonstrated how the disclosure of something of what happened behind the scenes could interpret the work of the Post Office. For his own part he did not think the Post Office had ever been as inefficient as it had often been represented to be; but it was a human failing to take all the unknown, not *pro magnifico*, but with great suspicion, and the policy of putting its cards on the table had been of great service to the Post Office in gaining the confidence of the public.

Mr. Eric Simons, while finding the address admirable, took the opportunity of pointing out inconveniences resulting from the grouping of institutions without individual cross-references in provincial telephone directories. He also enquired whether the *Post Office Magazine* mentioned by Col. Crutchley was available to persons outside the Post Office service.

Mr. A. W. Swan referred to the question of relations with the Press, mentioning that it was not always easy to secure the consideration of the Press in affording opportunities to organisations such as that represented by himself to counteract damaging articles or comments at the time of their appearance. He also referred to the difficulty he had found to exist in the matter of securing the presentation to the public of "documentary" films.

Mr. B. M. Headicar remarked on the poor quality of the pens supplied to the public in Post Offices, and on the advantage it would be to the public to have the use of sponge-bowls for stamp-damping.

As an example of the versatility and resource of the Post Office in meeting the requirements of even small parties of people, Dr. G. Pratt Insh related an experience of the members of the Anglo-American Congress of Historians that held its quin-

quennial meeting in London in the summer of 1936. The greater part of the work of this Congress naturally consisted of lectures and group discussions, but one day was set aside for a survey of historic London, that began at St. Martin-le-Grand. There, right in the centre of the great courtyard with its red mail vans swiftly moving in endless succession, the party halted at a small railed enclosure: a barrier was raised, and at the foot of a stairway, twenty-five feet beneath the surface of the courtyard, the visitors found themselves before a magnificent section of the defences of Roman London—two converging walls and a great circular bastion. From their guide the visitors received a brief but most interesting exposition of the historical significance of this long-buried fragment of the Roman engineers. A department, Dr. Pratt Insh concluded, that could not only supervise the activities of flying boats but could also preserve and interpret the antiquities of Roman London was surely not the least versatile branch of the Civil Service.

Professor R. S. Hutton pointed out that the practice of relying upon local organisations not representative of the whole community for advice on the postal services to be provided frequently led to considerable inconvenience, and quoted the absence of deliveries in the afternoon and evening of local early-closing days as an example. He also said that the greatest benefit the Post Office could confer would be the restoration of penny postage.

Mr. W. C. Berwick Sayers described how he had been consulted by the Post Office on the organisation of a general information service, and said that the task would be found to be one of great size and difficulty, not likely to be successfully organised without much preliminary study. He was not quite clear whether what Col. Crutchley had mentioned was to be a service answering all kinds of enquiries, or merely those bearing on the Post Office's functions; but the former would be too ambitious to attempt.

Mr. Theodore Besterman questioned whether the function of the Public Relations Officer was not merely that of keeping the public quiet.

Mr. Edward Carter was of opinion that the main, if not the sole, function of a Public Relations Officer might not be better described by the word "publicity," which, however, tended to carry a certain suggestion of not completely praiseworthy activities. He also referred to the difficulty of securing the exhibition of documentary films.

Col. Crutchley, in reply, said that he was gratified to find his audience so interested and productive of useful criticism.

He agreed with Mr. Simons that provincial telephone directories needed improvement, notably by the provision of cross-references and by further subdivision. The suggestions made would be taken up.

The *Post Office Magazine*, though primarily for the staff, was on sale to the public at the counters of head offices.

In reply to Mr. Swan's observations, he thought that the iron and steel manufacturers could not be using all the methods open to them for putting their point of view before the public. He thought that most editors, before printing an item which might injure certain interests, would try to ascertain the other side's point of view. The Post Office was free from one cause which might lead to complaints such as that which had been made; its prices did not rise. Regarding the exhibition of films, he pointed out that Post Office films were not shown at cinemas but in circuits of parish halls, and to schools.

He noted Mr. Headicar's suggestions concerning pens and sponge-bowls: he thought the former had now been dealt with after initial difficulties of unauthorised removal.

He was glad to hear Dr. Pratt Insh's commendation of the guidance provided for archaeologists, which, while not a part of the service of the Post Office, was catered for as efficiently as practicable. He himself had been agreeably surprised to find a tablet of historical information on the door of the Post Office at Bath.

In reply to Professor Hutton's remarks, he said that every effort was being made to make the Post Office less formal and more human in such directions as that of correspondence. The restoration of penny postage was a question of finance, and the six million pounds it would cost if restored would have to be recouped in some other form of taxation. With regard to deliveries on early closing days, he could only say that the local staffs had to have their half-day in each week, and the curtailment of deliveries on one day was the obvious method of letting them do so.

Mr. Berwick Sayer's criticism of the methods which had been used to obtain information for the setting up of a general enquiry service had been directed at enquiries which were merely preliminary and were part of a much more extensive

investigation. The proposed service would be limited to Post Office matters in the main, though it was not intended that the limitation should be so rigid as to include matters within the ordinary knowledge of the enquiry staff.

With regard to Mr. Besterman's fear that the Public Relations Officer's function was merely that of keeping the public quiet, he thought that the implied estimation of the public's docility was scarcely accurate.

The CHAIRMAN said that the meeting owed a debt of gratitude to Col. Crutchley for breaking into his holiday to deliver so interesting an address and answer the questions raised from the fullness of his knowledge. The Englishman's attitude to the Government and its servants had undergone a profound change, and the civil servant could no longer be described as one who "rose contrary to the law of nature by his own specific gravity."

Technical Translating.

By J. EDWIN HOLMSTROM, Ph.D., Assoc. M.Inst.C.E.

The object of this paper is not to be anywhere dogmatic, but to suggest points which members of ASLIB would perform a public service by discussing. I have set down some of these under the respective headings of Principles, Working Procedure and Dictionaries, and if readers will come to the Conference prepared with criticisms of the first part, informed opinions on the second, amplifications of the third, my purpose will have been attained.

Principles.

The first principle of good technical translating, I suggest, is to translate ideas and not words. In scientific as distinct from purely literary writing forms of words are not an end but a means—an imperfect means—whereby the writer endeavours to transmit ideas from his mind to other minds. His skill in doing this, even in his own language, bears no necessary relation to the validity or importance of those ideas, and if the original author's expression of them is obscure or otherwise defective it is the translator's duty to disentangle the author's intended meaning and express it in the best possible English, trying, if possible, to make the stream rise higher than its source. A technical translator must, therefore, combine three faculties : (1) he must be versed in and able to reason about the subject matter of the translation ; (2) he must be able to read the language he is translating from so well that he can go out to meet the author half way and apprehend the author's intended meaning even if this is badly expressed ; and finally (3) he must himself be able to embody that meaning in lucid, terse and euphonious English prose.

Lucidity and terseness go together in writing, much as efficiency and economy are different aspects of the same thing in engineering. It is a good plan, having written a passage, to read through it and strike out every word which can be struck out without altering the meaning of what remains ; for instance, if the word " very " is used often it defeats its purpose. Ugliness (such as two or more adverbs coming together) or lack of euphony tires the reader's mind and so detracts from clearness ; a practical test is that every sentence should be capable of being read aloud quickly without the reader spluttering. (As an example compare this sentence—" The process is one which possesses advantages in certain circumstances "—with any sentence by R. L. Stevenson.)

Technical English, at its worst, can be as horrible as the worst commercial jargon, but at its best it can derive a beauty of its own from the fact that it is a vehicle for ideas which are themselves so beautifully definite as to offer a writer who is sensitive to such things every opportunity of complying with Prof. Quiller-Couch's advice to prefer the concrete word to the abstract and the active and transitive verb to the passive and intransitive (*The Art of Writing*, 1928). But it would be ridiculous to attempt a lecture on the theory of English style as a passing incident in this paper, and I shall do no

more than remark that the way to cultivate a good style is to form a habit of reading critically, of examining fastidiously, and of never swallowing a sentence whole without looking at it. Books such as Fowler's *Modern English Usage* and A. P. Herbert's *What a Word* are useful here.

Going back to the principles of technical translating, I have suggested that a good translator does not allow the wording of the original to carry forward into the English. In French, for instance, there are so many words (such as *important*) similar in form to English words but different in meaning that the chances are against any passage being correctly translatable in this facile way, and in German, as an example, one might mention the word *sogenannte* as one which an unfastidious translator may render as "so-called" without appreciating the slight suggestion which attaches to this English but not to the German word, that the thing in question ought *not* properly to be so called.

The translator's responsibility is, however, a delicate one, for his duty to be untrammelled by the author's wording does not license him to distort by one hair's breadth the author's intended meaning or the author's emphasis. Going further, there arises a question on which I am myself undecided and should welcome the opinion of others: if the translator is to ignore the word form of the original, while at the same time being scrupulously faithful in regard to meaning and emphasis, how far should he attempt to reproduce the precise intensity of emotional colouring which may be appropriate in the one language and appear odd in another? Was it right, in translating an Italian paper on structural engineering, to tone down the author's exuberant "*questo magnifico edificio*" to some such phrase as "this notable structure" which an English engineer might have felt constrained to use if placed at the author's standpoint?

Here, perhaps, lies the difference between technical and purely literary translating: the former should aim at a cold objectivity and its reader should be unable to detect what language it has been translated from, whereas in the translation of a French or German novel a subtle suggestion of Frenchiness or Germanness in the English rendering may be pleasing and proper.

My portrait of a paragon of a technical translator is even yet not complete, for he has further duties to perform.

An incidental service he is well placed to render and which can sometimes be of value when publication of the text in the original language is still pending, is to point out mistakes in the original manuscript. A duty which provides a real test of technical as distinct from linguistic knowledge is that of translating mathematical symbols and equations—for although, in engineering for instance, such symbols are far from standardised, they are governed by habits, customs and mnemonic devices current among engineers in each country, and these, not being international, tend to hamper and sometimes confuse a foreign reader if the symbols have not been transliterated; hence the translator's job is not complete unless this is done. In reference to reinforced concrete, for instance, the French E_b, E_a meaning *coefficient d'élasticité du béton, de l'acier* should be altered in an English text to E_c, E_s, which will at once be recognised as "modulus of elasticity of concrete, of steel"; the French A for *allongement*

(elongation) should not be left to puzzle an English reader who may think it stands for " area." Similarly in writing trigonometry the Germans put *tg* where we put " tan," and instances might be multiplied indefinitely.

It is obvious, however, that transliterating the mathematical symbols adds so greatly to the labour involved that the translator cannot fairly be expected to do it unless his client appreciates this and is willing to pay accordingly. If this condition is not fulfilled, or if transliterating the symbols in the text would entail expensive amendments to illustrations, or if there is any doubt at all about the efficiency of the checking and proof-reading, it is probably better to leave the mathematics as it stands, merely taking care that the meanings of the foreign symbols are clearly stated and that the little tricks such as the useful German habit of adding the suffix *zul* (meaning *zulässig*) to the symbol, which stands for stress, when it is required to denote a " permissible " stress, are suitably explained.

A similar question arises as regards converting metric into British units of measurement. Unless the client is willing to pay for having this carefully done and rigorously checked, it is better not to do it. The necessity for such conversions depends upon the purpose of the paper which is being translated, but as a rule it certainly is more difficult for an English engineer to visualise dimensions expressed in metres, or stresses in kilogrammes per square millimetre, than in the units he uses daily. Common sense should be used in deciding how accurately to convert units : if, for instance, a foreign writer says that the water level fluctuates by about three metres there is no point in rendering this rough statement as 9ft. 10⅛in., when what he means is " about 10 feet." Another example of the kind of thing that reveals whether the translator is himself a structural engineer is his knowledge or ignorance of the fact that English engineers are accustomed to think of stress values in steel as so many tons per square inch, but stresses in reinforced concrete as so many pounds per square inch, following the American habit. No doubt corresponding examples could be found in every branch of science, and it might well be a rule that no one should undertake translations outside his own province unless they are to be checked or edited by a specialist therein.

Another moot point is whether or when titles such as *Ingénieur-en-chef des Ponts et Chaussées* or *Regierungsbaumeister* should be translated ; some of them are practically untranslatable.

I raise the question here whether it might be possible for technical translators to agree upon some code of practice or set of standard specifications for their work, enabling those who require translations to indicate their wishes in these matters and be charged accordingly. If the Conference is of this opinion perhaps an approach could be made to the British Standards Institution.

Working Procedure.

There are at present three non-profit making organisations which concern themselves with the mutual interests of technical translators and their clients. These are the ASLIB Panel of Expert Translators, the Institute of Linguists, and the Translators' Guild which is an organisation for placing publishers, authors and translators of books

in touch with one another and which covers technical work only incidentally.

According to Kelly's Directory there are in London altogether sixty-one established translating bureaux, of which seven state that they do technical work, in addition to a great many secretarial bureaux which advertise incidentally that they undertake translations. I have no knowledge of how the work in these bureaux is organised; perhaps someone will be able to refer to this in the discussion. My own point of view is that of an individual who does a great deal of translating in his spare time and is confronted occasionally with the problem of so planning the use of a limited number of hours a day as to yield the greatest possible output of work in a period of some weeks or months.

The maximum number of distinct phases into which it is possible to subdivide the work of translation—assuming that it is desirable to do so—are the following nine:—

A. Reading the original.
B. Elucidating any unknown or doubtful words.
C. Drafting the English version.
D. Recording this draft.
E. Correcting the draft.
F. Typing the final copy.
G. Inserting mathematics.
H. Examining the final copy for mistakes.
I. Correcting any such mistakes.

The question for discussion here is the best way to plan each of these operations, either by the translator single-handed or with collaborators, so as to economise effort and maximise output.

In the first place it is just possible to combine all nine of these phases in a single operation provided the work is not too difficult; when work has to be done in a great hurry and occasional crossings-out in the fair copy can be tolerated the best plan may be to translate direct from the original on to the typewriter, simply drafting each sentence in one's head before typing it and pausing as necessary to use the dictionary.

As a rule, however, it pays at least to separate the phases A, B, C and D from the phases E, F, G, H and I; in other words it is best to make a rough draft, and have the final copy typed from this after correction. The translator's time is more valuable than that of a typist knowing only English, and it is economical to arrange for the typing to be done by contract or otherwise, rather than to do it oneself if one is busy. The next step in subdividing the work, if it is desired to make one translator's key knowledge cover as large an output as possible in a given time, is to let items G and H be done by a third person (or alternatively they may be done by the typist if she is competent): someone who can read the foreign language (not necessarily as well as the translator himself) may read through the final copy to make sure that nothing has been left out and that any mathematics, bibliographical references, etc. have been correctly copied, marking any mistakes or points on which he is not certain with a soft pencil in the margin but leaving it to the translator himself to fulfil his responsibility by making the corrections, deciding the

doubtful points, and rubbing out the pencil marks. The employment of an assistant to check back against the original is even better than doing it oneself because, apart from time saved, mistakes or omissions are more likely to be noticed by an independent person. It also affords a means of training translators.

The copying in of mathematics, item G, may quite well be done by someone whose time is less valuable than the translator's, provided it is checked by the latter, and if all symbols are thus inserted by hand amid the typewritten text it is a help to the printer who has to set up the symbols in italics.

Let us now revert to the items A, B, C and D : is it possible or expedient for these to be divided up among more than one person ? Clearly it would not be economical to take up two people's time if one could do the job as quickly by himself, but there may be cases where a partnership between one man who is predominantly a linguist, another who acts as the specialist technical consultant, and perhaps even a third person who is better than the first two at composing English, would be the best way of working.

Item C is intended to cover the act of deciding how the ideas are to be expressed in English, and item D the act of putting the expressions so decided upon on record with a view to the later operations which we have already discussed. C and D may be performed by the same person or by two persons, and the following possibilities are open :—

1. If the translator who carries out C is later going to perform operation F by himself, he can scribble down his rough notes as roughly and illegibly as he likes, using whatever abbreviations he chooses, and rely on his memory to interpret them (aided by reference back to the original language if necessary) when he comes to type them out. There is a good deal to be said for this method, because if the translator does his own typing he can, to a great extent, combine F with E. The question really depends on whether he likes typing.

2. If the translator is able to write shorthand of a kind which the typist is able to read, then this will probably be the best plan to adopt.

3. Failing either shorthand or willingness to do one's own typing, the other way is to write out the draft in longhand, which is tedious but straightforward, satisfactory and easy to revise.

4. The translator may dictate the draft to a shorthand-typist, afterwards correcting her transcript and having it retyped as already explained. The objection to this is that the translator and the typist must work the same hours, and yet the typist must have time to do her typing.

5. What I find the best and most economical method in my own case is to record the draft on a dictating machine and have the records transcribed independently by contract at so much a thousand words. This enables one to do one's work as regularly or irregularly as one likes, at any hour of the day or night, without regard for anything but one's own convenience ; the machine stops and starts on pressing a button, and one can pause between sentences, or make it repeat certain passages aloud, without being rendered self-conscious by the presence of a typist. This method is also quicker than any other I have tried ; the actual dictation takes about one-sixth of the time required to write out the draft in longhand, and even allowing for correcting and improving the draft as transcribed before it is finally

retyped, the total demand on the time of the translator himself is only about one-half of that otherwise required. A dictating machine can be bought for £65, so that allowing 5 per cent. interest and 20 per cent. depreciation, together with an allowance for the cost of the records, the total works out at about an average of a shilling a day. In other words, one need only do a fraction of a page a day more of technical translating at the usual rate of payment for such work in order to cover the cost of the dictating machine, and in return for this one's rate of output is doubled.

It would be of interest to hear other translators' views as to the best methods of arranging such work.

Dictionaries.

Dictionaries are, of course, indispensable in translating, but they are dangerous, however good, because they entail a risk of the very thing I have condemned all through this paper—namely, the mechanical translation of words rather than the operation of the translator's trained mind to express in English the same ideas that the author has expressed in his own language. To consult an inter-lingual dictionary (as I have already remarked) is to short-circuit one's mind, and proficiency in technical translating may be measured by the infrequency with which the translator is obliged to do this: but that is not to say that he should not make constant reference to as many dictionaries as he can find in order to widen and deepen his knowledge. The most valuable dictionaries and aids are those which educate instead of short-circuiting the user's mind, and to illustrate what I mean the book I wish to quote here before any other is A. King and H. Fromherz's *German-English Chemical Terminology: an Introduction to Chemistry in English and German* (London: T. Mundy & Co., 1934. 272 pages, 7*s.* 6*d.* nett).* This is a kind of general refresher course in chemistry which has the peculiarity that an English and a German version of the same subject matter are printed on parallel pages, helping the reader to develop his power of thinking about chemistry in either language alternatively, while, at the same time, the inclusion of good indexes enables the work to be consulted like a dictionary in which every word is shown in a natural context. There is a similar work, by the same publishers, in reference to geology, and it is to be hoped that others may appear in all branches of science.

Single language dictionaries, though not of much help when one is baffled by an unknown word in an urgent translation, possess a long-term educative value which makes them worth using. In French the *Nouveau Petit Larousse Illustré* is as useful as it is entertaining, and there is a German book by O. Basler: *Der Grosse Duden* (Harrap, 1935), containing pictures of hundreds of technical objects with their names in German. Above all, anyone who has occasion to write English and wishes to do it well should possess a good English dictionary such as the *Concise Oxford Dictionary*, and refer to it constantly.

Inter-lingual technical dictionaries are of three types:—

1. Bi-lingual and tri-lingual dictionaries in which the words are arranged in a separate alphabetical order in each "language from."

* Books on the same plan relating to Botany and Physics are now advertised as being in the press, and one on Zoology as being in preparation.

This is the quickest kind to use. One of the best is the *Hoyer-Kreuter Technological Dictionary*, edited by A. Schlomann (Berlin: Springer, 1932, 6th edition), in three volumes (German-English-French, English-German-French, French-German-English) of about 800 pages each, priced at 78 RM. per volume. Its typography is well chosen—a matter of the first importance in such a work—and its purpose is to provide a technological dictionary which covers a wide field, for general use. A specialised chemical work arranged in the same way as this, again in three volumes but somewhat larger in size, is A. W. Mayer's *Chemisches Fachwörterbuch* (Leipzig: Otto Spamer, 1929), in which each word is followed by a synonym or explanation.

A smaller chemical dictionary of great merit, which gives many physical, biological and metallurgical terms in addition to the strictly chemical, and which also embodies a good deal of general vocabulary, is A. M. Patterson's *German-English Dictionary for Chemists* (London: Chapman & Hall, 1935. 2nd edition, 411 pages), which also has a companion volume, *French-English*, and an instructive preface on the subject of technical translating. Another excellent specialised dictionary (but by no means narrowly specialised) is H. Freeman's *English-German and German-English Dictionary for Metallurgists*, in two volumes, 347 and 227 pages respectively (Leipzig: Otto Spamer, 1935), each containing about 32,000 words. These cover many welding terms which are difficult to find elsewhere.

Several dictionaries are published by Routledge, including Kettridge's *French-English Technical Dictionary* and Webel's *German-English Technical and Scientific Dictionary*. Others for Spanish are about to appear.

2. Another type of dictionary has the corresponding expressions in many languages printed in parallel columns, so that a single volume (or succession of volumes) serves for translating from any one of these languages into any other. The sequence being alphabetical in only one of the languages it is necessary when working from any of the others to refer first of all to a separate index giving the page number where the required word will be found in the dictionary itself. Having to make this double reference is, of course, a disadvantage—especially in the case of words which occur several times over in different parts of the book, so that the reader is obliged to turn them up in turn before discovering the particular context he wants—but in some dictionaries of this type (marked with an * below) reference is made quicker by the index giving not only the page number but also the position on the page where a word will be found. The advantage lies in the fact that, for instance, a six-language dictionary on this plan takes the place of thirty bi-lingual dictionaries.

Pitman's *Technical Dictionary of Engineering and Industrial Science in seven languages* (English, French, Spanish, Italian, Portuguese, Russian and German) is of this type. It consists of four volumes which are continuous, not subdivided into branches of engineering, because, to quote the preface, "it was found that about sixty per cent. of any such special lists must consist of more or less general engineering terms, and that just about forty per cent. would be peculiar only to the branch in question. For instance, no book on steam engines would be complete without pipes and pipe joints, yet the latter would be equally essential to water or gas engineering." The arrangement

of the terms in the first column is alphabetical in English so that the dictionary is much quicker for translating from than into English. The introductory section entitled " The Art of Technical Translating," written by the editor, Ernest Slater, is interesting, and there are other special features.

Another more specialised dictionary on this plan is that prepared by the Intelligence Division of the Naval Staff, and published by H.M. Stationery Office in 1924, under the title *A Dictionary of Naval Equivalents** which covers English, French, Italian, Spanish, Russian, Swedish, Danish, Dutch and German. Volume I has 362 pages, each containing about twenty expressions in all these languages, while Volume II contains a separate alphabetical index for each language (other than English which is covered by the arrangement in Volume I); the price is three guineas for both volumes. The terminology covered is not strictly confined to naval work but contains many useful equivalents in relation to shipbuilding and marine engineering.

Another undertaking on this plan is the small *Technical Dictionary of Road Terms in Six Languages* (Danish, German, English, Spanish, French, Italian) which has been compiled by the Permanent International Association of Road Congresses, and includes definitions of the terms.

If the principle of having to look up everything twice is accepted its logical development is that adopted in the *Polyglot Dictionaries*, of which one volume (General Technical Terms) in English, and corresponding volumes in French and German, have recently been published at 6*s.* each by Technical Press, Ltd., as the forerunner of similar books for other subjects and languages. Each volume refers to one language only and is divided into two separate halves, the first half containing words arranged alphabetically and giving index numbers which will be common to all languages, the second arranged in order of the index number and giving the words in the language covered by that particular volume. Thus the user need purchase only those languages and those subjects which fall within his field of work.

3. A third type of technical dictionary is similar to 2 except that it contains illustrations in which the significance of every term is indicated, a merit which in my opinion more than compensates for the nuisance of double reference, because (if I may harp on this once again) it educates instead of short-circuiting the translator's mind. The best known example of this is the *D-S Series of Technical Dictionaries in Six Languages** (English, Spanish, German, Russian, French, Italian), published as regards this country by Constable & Co. Since 1906 altogether 17 volumes have appeared, subdivided by subject matter and varying in price from 10*s.* 6*d.* for Internal Combustion Engines to £5 for Electrical Engineering.

More recent volumes continuing the same series as the above, but larger in format, are appearing under the title *Illustrated Technical Dictionaries in Six Languages,* published by the V.D.I. Verlag in Berlin and distributed in this country by Lewenz and Wilkinson, Ltd. As an example Vol. II may be mentioned: this is a revised edition on Electrical Engineering and Electrochemistry, with 1,304 pages and 3,965 illustrations, which appeared in 1928 and is priced at £4. It is stated in the preface that the cost of preparation was in the neighbour-

hood of 500,000 gold marks, provided by the German Government jointly with various scientific and engineering societies.

The *Guides Techniques Plumon : Dictionnaires Méthodiques Illustrés,* published by Béranger of Paris and Liége, are somewhat similar in plan though less ambitious and may be worth mentioning here because those of them which are in six languages include Dutch (in the place of Russian as above). As an example, Vol. 26 (Tome II) deals with Bridges and Roads in six languages ; it was published in 1922 and contains 735 pages, priced at 7*s.* 6*d.* only. It is stated that there will eventually be forty of these vocabularies in two or more languages.

The same principle is followed in the *Illustrated Technical Dictionary* for the special field of technology covered by the Permanent International Association of Navigation Congresses. This has sketches on the left-hand page, and parallel columns giving the French, German, English, Spanish and Dutch words corresponding to the sketches on the right-hand page. Its compilation was agreed upon internationally, within the Association, in 1932, and each chapter is to be published as soon as it is ready. So far three chapters are available, dealing respectively with Fixed and Movable Weirs, Locks and Dry Docks, and Maritime Signals ; that on Ports will shortly appear, and the subject matter relates to civil engineering rather than to navigation in the narrow sense. In undertaking this work the Association have set an example which other international technical bodies might well consider following.

The notes I have given on technical dictionaries are, of course, far from complete, as they refer merely to some of those which happen to have come to my notice. It may be useful for some readers to know that they can obtain gratis, on application to the Science Museum Library at South Kensington, a document known as *Bibliographical Series No.* 256, which is a catalogue of the 188 " Technical Glossaries and Dictionaries, English, Foreign and Interlingual," which are available in that Library.

DISCUSSION.

The Chair was taken by Mr. J. G. Pearce, who introduced the speaker as an engineer who did translating in his spare time. At the conclusion of the paper, the Chairman read the following notes contributed by Mr. Edward S. Hodgson :

Procedure.—I have no definite method of procedure, but this varies according to the character of the work and my own particular mood.

1. In the translation of important technical papers of a very involved character my usual practice is, first, to read carefully through the original to get a general idea of the contents, and to take cognisance of any difficult expressions, sentences, etc. I then type directly a first draft of a portion (say, 2–3,000 words). This I put aside for a few days, then read it carefully against the original and make any necessary alterations or improvements in my English text. The same procedure is repeated with the other sections, and I finally retype all the sections in final form. The final typescript is again read through against the original, and if any sheet or sheets are unsatisfactory they are retyped once more.

In the case of shorter papers I may type out the first draft in a single spell of work, and read through each page as I go along, altering or amending until I have got every page right.

2. Brief and straightforward descriptions of plant, machinery, apparatus, etc. I usually type directly from the original at one or two sittings, and read my typescript through. My experience with this type of work is so long and extensive that I rarely have to alter or retype my first typescript.

3. Much of my work consists in the translation of letters, brief specifications, etc. for engineering firms who have no linguists on their staffs. As, usually, such work is

very urgently required, I type it out direct and then merely alter, in ink, any technical terms I may have rendered unsatisfactorily. Style is not important in such translations, the main thing being to supply a correct version from which engineers, estimators, etc., can work. If the translation relates to a subject with which I am not familiar—and the general translator has to be prepared to do a wide variety of such work—I have sometimes to rely on technical dictionaries to supply the correct English equivalents of certain technical terms. Unless I can verify these satisfactorily, I query them, or even suggest alternatives in my typescript.

Questions of Standardisation, etc.—Wherever possible I give (in parenthesis) the English equivalents of all metric quantities, except where a specification, etc., calls for the supply of an apparatus, instrument, or part in metric units (lengths of metal bars, motor-car speedometers, pressure gauges graduated in kilograms per square centimetre, etc.). Not being a mathematician, I usually leave mathematical symbols exactly as expressed in the original, as their meaning is usually explained in the text. This remark does not apply to those well-defined cases where we have conventional symbols in English (as " R " for electrical resistance, in place of the German " W ").

This seems an appropriate place to mention the confusion in the minds of some engineers as to the exact English equivalent of the German term " *atü* " (" atmosphärischer Ueberdruk " or *gauge pressure*). Some engineers and translators still persist in using the old (or physical) atmosphere = 14.696 lb./sq. in., whereas, in German technical literature, 1 *atü* (the " technical atmosphere ") = 14.223 lb./sq. in. or 1 kg./cm^2. In *Molesworth's Metric Tables,* for instance, the table " Atmospheres to Pounds per Square Inch " is computed on the basis of the " physical atmosphere."

The question of retaining the emotional colouring of the original text is largely a matter of feeling and style. In the vast majority of engineering translations the main thing is to give an accurate rendering of the original in as pleasing and readable a form as possible. For this reason the involved arguments of German engineers and scientists are best translated by a specialist in the particular subject, who also has a thorough knowledge of the language. He alone is able to convert the originals into tolerably readable English.

If emotional colour is imparted to the translated text, the translator must take care to maintain uniformity of mood and style throughout.

Dictionaries and other aids.—Every general technical translator must have at hand a complete set of up-to-date technical dictionaries and reference works. It is, however, wrong to place too much reliance on technical dictionaries, unless they are reasonably modern and are compiled by experts in each particular branch of science or engineering. Very often I have had to obtain from correspondents abroad precise information as to the particular significance of some term newly introduced into the language. A series of loose-leaf books, or, better still, index cabinets, forms a very useful adjunct to the translator's reference department, since corrections in translations can be noted down and referred to at any time.

Instead of technical dictionaries being compiled by private individuals and published by private firms, it would be a much better plan for Government departments, technical societies and experts in each country to collaborate in the production of such works, and to revise them at frequent intervals. If the Governments of the principal countries (Britain, U.S.A., France, Germany, Italy, Spain, and Russia) could provide small annual grants for the purpose, such a course would facilitate the translator's task and the interchange of scientific and technical information generally. This particular function might, indeed, have been performed by the League of Nations, which seems to waste vast amounts on other far less worthy objects.

American engineers and scientists should always collaborate in the production of all specialised dictionaries, since American terms often differ from those current in England. This applies particularly to such subjects as electrical engineering, coal-mining, aeronautics, and others.

In Germany, the Government, the technical societies, the " Society for Promoting the Publication of Technical Dictionaries," and other bodies all collaborated in the production of the recent volumes of the *Schlomann Technical Dictionaries,* which are the only really reliable ones extant. Unfortunately, several volumes have had to be held up for lack of financial support ; nor are funds available for the constant revision which is necessary. It is here that the Governments, scientific and technical societies and other bodies both here and abroad might usefully combine towards this end.

In the ensuing discussion Mr. T. M. Herbert stated that he wished to endorse the suggestion made in the first section of the paper that there should be established

a code of practice or set of standards for translation work. In many organisations demands for translations came from research workers and it was a matter for careful decision as to what type of translation should be undertaken. For example, in some cases the needs of the individual would be met by an abstract translation in the first instance. This would help to decide whether all or parts of the document would warrant a fuller translation. If a full translation was then called for, one had to decide whether to undertake a complete and technically idiomatic translation or to be content with a rough or free translation, which, in the speaker's opinion, was often sufficient for internal purposes. Whilst agreeing, therefore, with the need for specifying certain broad types of translation, he doubted whether the British Standards Institution was a suitable body to undertake this work, and suggested that ASLIB itself should prepare such a specification.

Mr. H. H. Johnson said that a knowledge of the subject is as important if not more important than a knowledge of the language. He indicated the advantage of the illustrated dictionary, and made a plea that technical literature might also be English literature, and recommended the removal of superfluous adjectives.

Mr. Eric Simons defended the use of the adjective and said that it was of great importance that technical papers should be readable and not just a concise report of facts.

Mr. R. Brightman agreed with Dr. Holmstrom that a knowledge of the language and technical command of the subject need not be combined in the one person if co-operation was properly organised. Even when the translator possessed both qualifications the assistance of the specialist in looking over the draft was desirable, and there were few translations which did not require independent editing at one stage. He also endorsed Dr. Holmstrom's figures as to the saving in the translator's time to be achieved by use of the Ediphone system. With an efficient transcribing staff the output of the translator should be nearer trebled than doubled.

Mr. C. H. Gray said that the only ultimate solution of the language problem was the universal adoption of English for all international scientific and technical work. By "English" he did not mean basic English or any artificial language, but the language of the English-speaking peoples. He was convinced that this solution would be attained within the next hundred years. In the meantime, however, it was necessary to find some alternative, second-best interim solution. Mr. Gray said that the preparation and frequent revision of multi-lingual vocabularies by specialist bodies was that interim solution. These vocabularies should be illustrated in suitable cases. Account should, of course, be taken of the work accomplished in adioining fields, so as to avoid overlapping. He instanced the vocabulary now being prepared by the International Commission on Large Dams of the World Power Conference, in the preparation of which full account was being taken of the vocabulary prepared by the Permanent International Association of Navigation Congresses, to which Dr. Holmstrom had referred. Mr. Gray then pointed out, with reference to Mr. Johnson's remarks, that "Hig lif" was a French expression, the translation of which was certainly not "high life." This expression belonged to the class of what were described in French as *les faux amis*. He gave other examples, such as "Le Five o'clock," meaning "afternoon tea." Mr. Gray concluded by paying a warm tribute to Dr. Holmstrom for his excellent paper.

Professor R. S. Hutton said that it would be better to do without polyglot and bilingual dictionaries when one had a fair proficiency in the language and to rely on national encyclopaedias.

Mr. John F. Stanley drew a distinction between work in which the translation stands entirely by itself, the reader having no access to the original text, and work in which the English translation was printed or typed alongside the original, or was in some other way easily accessible to the reader. With the second category of work it was not practicable to take quite so much liberty with the actual words of the original text, although the rule that ideas rather than words should be translated still applied. In the second category also it was often undesirable to transliterate the symbols, as this might tend to confuse matters, particularly if the paper was to be discussed in the two languages at a meeting. In the electrotechnical field, however, it was seldom necessary to transliterate the symbols, since these had been standardised internationally. Commenting on part three of the paper, Mr. Stanley drew attention to the preparation, now in hand by the International Electrotechnical Commission, of an International Electrotechnical Vocabulary, in which the terms would be given in six languages and the definitions in two, English and French.

With regard to the suggestion that standard rules should be drafted for technical translations, Mr. Stanley supported the view that this should be explored by

ASLIB before the British Standards Institution was asked to take it up. With a view to assisting further discussions on the matter, he submitted the following draft rules, which took account of all the desiderata mentioned by Dr. Holmstrom in his paper :

DRAFT RULES FOR TECHNICAL TRANSLATIONS.

1. The translation shall express the author's intended meaning and shall not necessarily be a literal rendering of the author's actual words.

2. If the author's meaning is not clear, the translator shall make a translation of what he considers to be the intended meaning, and shall, if possible, refer the matter back to the author.

3. If the translator discovers mistakes in the original text, these shall be corrected, and the author's attention shall be directed thereto.

4. Degrees of emphasis shall be rendered in the translation only in so far as is consistent with the production of a perfectly natural English text.

5. If the symbols are to be transliterated, the Standard Symbols set out in *B.S.I. Publication* 560 shall be used in so far as they apply.

6. Titles of technical institutions or of technical literature shall not be translated, but shall be quoted in full in the original language.

7. Titles denoting professional status or qualifications of individuals, if quoted at all, shall be given in the original language.

8. Payment for technical translations shall be at the rate of so many words in the original text, and not at the rate of so many words in the translation.

9. If symbols are to be transliterated, or metric units converted, this shall be stipulated before the work is commenced and the fee arranged accordingly.

Mr. B. C. Curling urged the necessity for the use of technical translators of a list of British Standard Symbols and Abbreviations, printed side by side with the corresponding symbols and abbreviations in use in the leading foreign countries, and showing the values of the latter expressed in British units. This list should be incorporated in all technical dictionaries.

Summing up, the Chairman mentioned in connection with the translation of new technical terms a specialist publication which had appeared in German on Damping Capacity, and which contained a glossary of terms compiled by an English professor. He wondered how many times one good foreign paper is translated into English and whether it would not be possible to have a central body which did the translating and sold it or circulated it in some way to the bodies interested. He was quite certain that there was a great need to rationalise translating.

Mr. Donald Shapland referred to Dr. Holmstrom's mention of the sharing of the work of translation. At Sheffield there was now a recent interesting arrangement for sharing the cost of translation. A number of firms had agreed to consider any proposal put forward by a member of the group regarding the sharing of the cost of translation, particularly from the more remote languages, such as Japanese—(incidentally, all these firms also belonged to the scheme for the Interchange of Technical Publications in Sheffield). The City Library functioned in this arrangement as the impartial administrative centre. The firms were under no obligation to co-operate but joined only in a translation which was of direct interest to them. In practice a firm interested in obtaining a translation simply requested the City Library to ascertain whether any other of the associated firms would care to join them in the cost of the suggested project. The arrangement was as yet experimental and so far the cost of two translations had been shared—one from the Russian and one a lengthy German article. There were distinctly useful possibilities in such a scheme, particularly in areas like Sheffield, which mainly comprised a single industry and a fair number of comparatively small but important firms.

Dr. Holmstrom, replying to the discussion, welcomed Mr. Hodgson's contribution which the Chairman had read, but said that, personally, he did not like drafting direct on to the typewriter, as this made it more difficult to change one's mind about the order of the words than was the case when writing by hand.

Arising out of Mr. Herbert's and Mr. Stanley's remarks, there seemed to be a consensus of opinion in favour of establishing a code of practice which would seek to standardise the quality of technical translating, while recognising several different types of such work to suit varying requirements, and he hoped that their remarks might serve as a starting point for action in that direction by ASLIB. As regards one of the details mentioned, he thought it preferable to charge at so much per thousand words of the English rather than of the original, as the latter varied so much in arrangement and spacing that it was difficult to count. He was interested to hear of the forthcoming International Electrotechnical Vocabulary,

and agreed with Mr. Gray on the necessity for highly specialised illustrated works of this kind. He agreed with Professor Hutton that native encyclopaedias were often more valuable in the long run than inter-lingual dictionaries, but in the short run it was perhaps a counsel of perfection that the translator should deny himself short-cuts by way of the latter. He was pleased to note that Mr. Johnson agreed with him that knowledge of the subject was even more important than knowledge of the foreign language, and, personally, he shared Mr. Johnson's aversion to superlatives and unnecessary adjectives and adverbs. As Mr. Brightman had incidentally mentioned a particular type of dictating machine, Dr. Holmstrom pointed out the advantages of the new type of machine which he himself used which, instead of the wax cylinders, employed gelatine discs that could be posted in a letter, and did not have to be shaved in a special machine for re-use. If, as Mr. Curling suggested, symbols were to be standardised, it might be worth reconsidering certain proposals made some years ago for avoiding the use of suffixes which could not be written conveniently with a typewriter.

Mr. H. I. Lewenz, M.I.Mech.E., wrote that " Dr. Holmstrom, in his excellent and informative paper, very rightly points out the duty of the translator to interpret the author's meaning and express it in the best possible English. This is not always a very simple matter. It goes without saying that the translator must be thoroughly familiar with the subject-matter of the translation. One of the obstacles to writing good English is the hypnotic effect due to continuous working with a foreign language, resulting in the translator unconsciously tending to use the turns of speech proper to the language he is translating from. He must always be on the look out for this, especially if he will have no opportunity to rewrite the work. German technical literature is particularly difficult in this respect, and German patent specifications are specially evil. The writer of such specifications is apt to lose himself in whole flocks of parentheses. In the case of an ordinary technical translation it is, of course, correct to add or omit words from the original in order to make the English meaning clearer. In patent specifications, where the translator has to certify, it is not always safe to do this, although the temptation is strong.

I find it much easier in a technical description to write good English if I am allowed to abstract instead of making a more or less literal translation.

Another difficulty, again in connection with German, arises when new processes are discovered and described, because the German has a great idea of giving new names to every slight modification of a process. In the case of an international committee which had to deal with nomenclature concerning a branch of engineering which is in its infancy and is developing rapidly, the Germans put forward about 50 per cent more names than was considered necessary by the other nations concerned, and this necessitated a great deal of correspondence and argument, and in the end some of their expressions had to be left without synonyms in the other languages and had to be explained by a note. This kind of thing is productive of a good many headaches. I sometimes wonder whether these good engineers, when they write their papers, do not set out with the avowed object of keeping the translator guessing !

On page 84 of his paper the author asks whether the translator should attempt to reproduce the precise intensity of emotional colouring and instances the words *questo magnifico edificio*. I am definitely of the opinion that the translator should use language which is customary in the medium into which he is translating, otherwise there is a danger of the phrase appearing ridiculous.

The author's remarks on translating mathematical symbols are very much to the point, and I agree with him that this kind of work is extremely laborious, and I may say it is not always adequately remunerated.

Another question is raised by the author as to whether titles such as *Regierungsbaumeister* should be translated. Personally I think they should not be translated, because in only a few cases would they have any meaning in English. Nevertheless, when I come across the title *Minister des Inneren* coupled with a man's name I usually render this as Home Secretary.

I was greatly interested in the author's remarks on dictionaries. I myself have done a good deal of work in collaboration with Mr. Alfred Schlomann on his *Illustrated Technical Dictionaries* in six languages. Being myself a user of dictionaries I have in some cases despaired of doing the work in such a way that the user should never be at a loss. This is more especially the case in certain engineering trades, e.g. textile machinery, where the current names for a particular part may be entirely different in towns which are no more than ten or twenty miles apart."

Micro-photographic Processes in Documentation.

Introduction to the Session by PROFESSOR R. S. HUTTON, M.A., D.Sc.

This session of our Conference provides almost the first opportunity for librarians in this country to review the development and prospects of Micro-photography. The progress which has been made in the last year or two, particularly in the U.S.A., is difficult to keep pace with, even to those of us who have had the opportunity of recent visits to America. Mr. Watson Davis has kindly sent us a paper which deals with several aspects of the subject, but references should be made to two books recently reviewed in the ASLIB Bulletin,* to Mr. Vernon D. Tate's paper to the American Library Association in June 1937, entitled "The Year's Progress in Micro-photography," and to several papers presented to the Congrès Mondial de la Documentation Universelle in Paris last month.

This Conference will, no doubt, wish to know more about the apparatus which is used for micro-film production and for its subsequent reading or enlargement, and I hope Dr. L. A. Sayce will tell us of his experiences at Armstrong College, Newcastle, and that we may have one or two of the American machines exhibited. The wide scope of the possible applications of Micro-photography seems to me to call for several different forms of apparatus, and it is advisable, therefore, that those who are contemplating the installation of such apparatus should consider in advance most carefully the field of their requirements and its possible extension.

Some indication of this wide field can be seen by considering equipment which has already been developed, and each potential user should examine in detail the exact capabilities of the several types of apparatus and forecast with imagination what needs he is likely to be led up to.

Obviously any handy amateur photographer can himself rig up a suitable equipment for taking micro-film copies of printed matter, either from books in his own library or, by permission, in outside libraries which he visits; and there is doubtless much to be said for such flexible and portable apparatus.

Similarly with many simple forms of projection or enlarging apparatus it is easy to read such micro-film copies. Even with cheap eyepiece enlargers, such as those which Dr. Seidell has sent us, these films can be examined and read, although continuous use may be fatiguing. For any larger applications, such as are almost sure to arise very quickly even in small libraries, once the scope and advantages of micro-film reproductions are appreciated, special *ad-hoc* and more or less automatic cameras are soon called for and several forms of library apparatus have already appeared or are on the point of being available.

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* M. L. Raney: *Micro-photography for Libraries.* 1936 *Symposium.* American Library Association, Chicago. Price 10*s.* 6*d.*

R. C. Binkley: *Manual of Methods of Reproducing Research Materials.* 1936. Edwards Bros. Inc. Ann Arbor, Mich. Price about 16*s.*

Mr. Watson Davis and Dr. Draeger of Science Service, Washington, D.C., have for the past few years devoted much thought to devising both cameras and reading machines for such purposes. Their work has also stimulated several of the large photographic companies in the U.S.A., and many individual workers have also been busy.

The higher capital cost of such mechanised equipment is compensated by a big reduction in the running costs, especially the time-factor and the processing, i.e. developing, fixing, drying, copying, etc.

The Draeger camera shown at the Paris Exhibition, the Folmer Graflex Corporation camera, the Recordak Library camera, and the Saint Rat-Seidell camera, to mention those which have been more publicly shown or described,* all aim at labour and time saving by mechanised control of exposure and advancing the film, by book holding devices, and in some cases by moving chariots which rapidly bring one side of a book after the other into position for photography. Some of this apparatus is stated to be capable of an output reaching the remarkable maximum of 5,000 exposures, i.e. 10,000 pages a day, even from bound books, although of course it is likely to be used normally for much smaller requirements. The spools of film can be selected for either small quantities, say thirty-six exposures, as with the Leica camera on a 5ft. length of film, or for 100, 200 or even 1,000ft. lengths of film.

Such equipment is desirable, in fact almost essential, for libraries which are frequently called upon to copy a number of whole books, at a reasonable expenditure of time and money, and is also suitable for any large information bureau which may be established in this country to work on lines similar to the Bibliofilm Service of the American Documentation Institute described by Mr. Watson Davis, its originator.

The scheme of Messrs. Edwards Bros. Inc. Ann Arbor, Mich., to secure for subscribing American libraries copies of all English books, published before 1550, is well under way; it is estimated that there are about 4,000 separate books and a total of 400,000 pages to be copied, and the British Museum is already making micro-film for this project. It is reported that some fourteen American libraries have subscribed for these reproductions, and that the cost works out at $\frac{1}{2}$ cent (i.e. about one farthing) a page. The actual cost in large runs (10,000 pages) of finished negative film may be as low as half this, or, say, one shilling per 100 pages.

All such films are of course readily available for convenient reading in one of the projection or enlarging machines which have been constructed for the purpose, and which in most cases can alternatively be used to produce a photo-enlargement on paper, for those who prefer to have the results in this more widely usable form.

With projectors as with cameras foresight is necessary in selecting apparatus. The "Recordak" Library Projector, which is exhibited at this Conference, is eminently suited for reading film copy of newspapers, but would not be suitable for single frame 35mm. film copies of books, for which another form is at present under construction.

So far as Projector Reading apparatus is concerned it is obvious that once micro-films really get going any library using them will

* Photographs are exhibited of these and the actual cameras are shown of Saint Rat-Seidell and Folmer Graflex.

need quite a number of reading machines to satisfy its micro-film fans, although perhaps one camera will suffice.

Beyond the micro-film cameras suitable for installation in individual libraries there is an even larger scale production of micro-film copy which at present appears to be more suitable for centralising in the photographic manufacturers' works or in some special institution. The reason for this is partly the very high cost of the apparatus, partly that its rapid mechanised working enables one machine to handle a much greater output than is likely to be required in any individual library.

Newspaper files form an outstanding example of such special cases. All are aware of the great cost of maintaining a big collection of newspapers in libraries, largely due to the space occupied, to the cost of binding, and to the further difficulties caused by the poor quality of paper on which most of them are printed.

The New York Times, which only commenced a rag-paper edition for libraries in 1927, recently discovered that its files for the war-years, printed on wood-pulp paper were deteriorating very rapidly and, with the co-operation of the Kodak Company, decided to have a micro-film copy of the years 1914–1918, comprising about 90,000 pages; this has proved most successful, and several libraries have now purchased micro-film copies, which only cost about £90 for the whole five years. Micro-filming of newspapers has now taken on in America, and it is reported that some forty newspapers are now being currently filmed over there.

The "Recordak" Rotary camera* used for this purpose is a very special one, working at the rapid rate of thirty pages a minute,† and the work is carried out at the Kodak works at Rochester, N.Y., the newspapers being sent there once a month for copying. The whole cost of the finished negative copies is 14½ cents per foot of film, which carries the reproduction of about 8¼ newspaper pages; the cost of a second copy is less than half this, i.e. six cents per foot.

From the library point of view the space occupied by these film copies is less than 2% of the storage space of the bound volumes. The New York Public Library, which has installed reading machines similar to those which are here exhibited, reports that the public prefers to read the newspapers on these projectors to consulting the original printed copy. The film reduction is fourteen diameters (it is considered that a reduction up to twenty-five diameters would still be satisfactory), and the projected copy for reading is about double the original size of type, which adds to its legibility.

As in all other library applications, the film used is of the non-flammable type; and tests of durability by the U.S. Bureau of Standards hold out hopes that such film copies will be as durable as printed matter on rag-paper, although the film could be cheaply copied at any time, if deterioration became apparent.

For this and other large-scale applications not only do these mechanised cameras assure very rapid and cheap work, but methods and equipment similar to those used in the Cinema Film Industry can be used for developing and finishing the films.

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* An illustration of this machine is reproduced, thanks to the kindness of the Kodak Company.

† One month's issue of the *New York Times*, including the voluminous Sunday issues, can be copied in thirty minutes.

Newspaper " Recordak "

Of other large-scale applications carried out in the U.S.A., the following may be mentioned: (1) Micro-filming of library card catalogues for the purpose of duplication or merging into Union Catalogues; the inclusive cost of the finished micro-film is said to be £100 per million cards; (2) Day-by-day micro-filming of all bank cheques, now almost universal in the U.S.A. and already adopted by some of our largest London banks, a use which obviously runs into millions of photographs in a very short time; (3) U.S.A. Bureau of Census, reproduction of the vast files of Census schedules running into millions of pages; (4) over two and a half million Veterans' Administration Pensions, 4 by 6 inch index cards have been photographed and arranged with guides so that they can be used in the film form just as easily as the original card records, although the whole installation only occupies about 5% of the space required by the original file.

It is too early to talk of the possible developments, which will obviously arise, in the design of mechanical equipment for dealing with such micro-film collections. One does not have to be very imaginative to see how readily Photo-electric cell and Hollerith methods can be applied to select and pick out almost instantly from a long length of film just the few special photographs which deal with a selected subject or author. One can also readily visualise the immense possibilities which such micro-films have for union catalogue purposes. When one bears in mind the diminutive space occupied by the micro-films in relation to the bulky printed matter they reproduce, it is clear that they will play a big role in solving the nightmare problem of libraries, the congestion of space. One wit has put it that the whole contents of a library can on micro-films be compressed to the space originally occupied by its own card catalogue.

The Uses of Microphotographic Processes in Documentation.

By WATSON DAVIS.
President, American Documentation Institute
Director, Science Service, Washington, D.C.

Microfilming promises to solve some of the most troublesome and difficult situations that face our intellectual and scholarly institutions and libraries.

The microfilm will substitute for the loan of a book from a library and can potentially bring the library resources of the world to the desk of the individual scholar. It will copy vast files of documents for preservation, protection, and economy of space. The prodigious daily flood of newspapers of the world can be compressed photographically into little rolls of microfilm. It will allow scholars to read into the vital record of organised knowledge complete and detailed accounts, replete with illustrations, of their researches, and these publications will remain perpetually "in print." Microfilming offers the first real chance of marshalling the widely scattered bibliography of world literature as, for instance, in science and building up a centralised information file from which can be provided to researchers to-order bibliographies of any subject. The vast and necessary statistical compilations of government and business, such as censuses, birth and death records, financial files, business correspondence, can through microfilm be duplicated at a cost that can be afforded.

Microfilm is perhaps the newest and most promising tool of documentation. Compact to an extraordinary degree, promising to outlast our omnipresent paper, and capable of reproducing anything that the eye can see, even in natural colors, microfilms promise to hurdle some of the present barriers to easy and effective interchange of intelligence in many fields.

In many aspects the expert to-day is besieged just as effectively as Paris was in 1870 when the French photographer, Dagron, made the first microfilm and saw it flown out by carrier pigeon. The expert is ringed by high printing costs, by the scarcity of many publications published in small editions and not widely distributed, by inability to locate what has been published. Microfilm may very well lift this siege. It promises to give the specialist or research worker in science, both in its physical and more human aspects, in economics, literature, history and all other intellectual fields a new freedom in both publishing his own accomplishments and knowing what others have done.

Providing the instrumentation for microfilm, that is, the cameras, reading machines, projection printers, developing and other apparatus that are necessary, is still in its relatively early stages. Much progress has been made, but more must be accomplished. The period of gestation of an idea is long and arduous. The design, construction, and merchandising of a machine also takes much longer than the eager customers wishfully expect. Nevertheless, progress is being made. There are three cameras of varying degrees of portability and

adapted to different uses produced commercially in the United States and several more under construction and due for commercial appearance in the next year. There are several microfilm reading machines available, ranging from a monocular viewer for inspection and brief reading purposes selling for $1.50 to a newspaper microfilm reading machine that sells for about $200. Other apparatus is largely undeveloped or built to order. There is real need and hope for a satisfactory reading machine that will cost about as much as a portable typewriter and I hope that out of the development work of Science Service's Documentation Division there will come commercial production of such a reader by a commercial concern in a matter of months.

There is real opportunity of co-operative organisation and conduct of documentation activities through the use of this new tool, the microfilm, as a unifying agency. As I said in an address before the World Congress of Universal Documentation, Paris, August 1937:

"Obviously documentation is truly universal, even in the literally astronomical sense, since photographs taken through great telescopes now record the great stellar galaxies that dwarf our own Milky Way! Obviously also with such a field it is necessary to confine our aspirations and attention to the more immediate and practical aspects wherein there is some chance of effective international co-operation.

"Despite the seemingly chronic disturbed state of the world, it is a hopeful fact that exchanges of intellectual intelligence are almost uniformly continuous and effective. Scientists of one country conduct joint researches with fellow specialists of another nation, even though the political and military leaders of those two nations may be glaring at each other. Librarians work with foreign libraries almost as though they were under the same flag. Such exchanges in the intellectual world make for optimism for the world's future."

When such a technique as microfilming is young and not yet widely applied, there is larger opportunity of using it to bring about unified effort in the interests of efficiency, resulting in less duplication of effort within both intellectual and geographical areas. There is hope, therefore, that microfilms can catalyze co-operation in many efforts and projects that without it might have developed along isolated and specialized lines.

There are three operating functions that can be served by microfilm, and it is difficult to see how they can be accomplished except with the advantages inherent to microphotographic duplication.

Most immediate and practical to put into operation is the microfilming of material in libraries upon demand. It will become fashionable and economical to send a potential book borrower a little strip of microfilm for his permanent possession instead of the book and then badgering him to return it before he has had a chance to use it effectively. I believe that reading machines for microfilm will become as common as typewriters in studies and laboratories. If the principal libraries and information centers of the world will co-operate in such "bibliofilm services," as they are called, if they exchange orders and have essentially uniform methods, forms for ordering, standard microfilm format and production methods and comparable if not uniform prices, the resources of any library will be placed at the disposal of any scholar or scientist anywhere in the world. All the

libraries co-operating will merge into one world-library without loss of identity or individuality. The world's documentation will become available to even the most isolated and individualistic scholar.

The practical nature of this project is indicated by three years of successful operation of Bibliofilm Service in the Library of the U.S. Department of Agriculture. This fall this service will be extended to the Library of Congress, the national library of the United States, and the Army Medical Library, America's largest medical collection. America is ready to do its share in the establishment of a world net of bibliofilm services. Perhaps this can be best organised on a national basis, with one library or agency in each country undertaking to handle and route orders from other countries in the interest of expediting and making effective such interchanges.

Supplementary to the problem of making available existing literature is the securing of publication for all the material that should be recorded and made available to the intellectual workers of the world. In this microfilm can play an important role, giving publication with economy and effectiveness.

The microfilm can be used to secure what can be called " auxiliary publication." It will supplement other forms of publication and make accessible material of all sorts that cannot now be printed because of economic factors. It will make available valuable research data that now go unrecorded. It will make available out-of-print and rare books. It is adapted to the publication of photographs and other illustrations. Auxiliary publication service (which might be named " Docufilm Service ") should be auxiliary to established channels of scholarly publication and it should aid and not hinder journals. Editors of journals and institutions should act as intermediaries between the authors of papers and the " Docufilm Service."

This idea has been given an experimental demonstration in America in connection principally with scientific papers. There a journal editor can publish as much or as little of a technical paper as he wishes. In the case of a very specialized paper it may be only an abstract or summary. He appends to the notice or article a note saying that the full article with diagrams, pictures, etc., can be obtained by remitting a certain price and specifying the document number under which this full article has been deposited at the central agency operating the auxiliary publication service. Orders are sent by readers directly to this central agency, which is the American Documentation Institute at Washington, D.C. Microfilms of the document are made only if and when ordered. In this way the document is perpetually " in print " but no extensive, space-consuming stocks need be stored, only the document itself and the microfilm negative from which positives are made for distribution. The operation of the plan is simple and uncomplicated, and editors may use it when, how, and if they find it helpful. No financial participation or guarantees on the part of the editor or author are required.

It is believed that this or analogous techniques can be adopted in other countries, preferably with central agencies serving those countries. If this is done there can be effective exchange of negatives between " Docufilm centers."

While the plan of auxiliary publication suggested could be used with other methods of duplication, microfilm is the least expensive

and most universal in that it will handle text and illustration of any sort.

Bibliofilm and Docufilm are capable of immediate utilization. They can begin small and be allowed to grow as needed.

Another documentation project of importance to the world is much more formidable and cannot be accomplished without much planning, development, and international co-operation. This is the possibility of a world bibliography, beginning in the field of science but eventually extending to all fields.

The economy and compactness of microfilm gives new hope that a world science bibliography may be accomplished without ambitious hopes and promising plans being drowned in a sea of cards and smothered in a maze of details. It is possible to visualize the creation in some world center of a card file with a card for every article, paper, book, or document published in science that is important to the written record of science. Each card could be given multiple classifications. Now if for each of these classifications the card were microfilmed with a pattern representing that classification, and if selection from microfilm is developed so that a roll of microfilm is run through a selector which prints only microfilm bearing a predetermined classification pattern, we shall have the mechanism whereby a great world file of bibliography can be made to produce special bibliographies in any subject to order. And this should be done at a cost that would allow its use by every scientific research worker.

When it is considered that most of the scientific literature of the world has been listed by title or abstract bibliography somewhere in abstract journals, in special bibliographies, or such large card compilations as exist in the Science Museum Library at London, the task while gigantic does not seem impossible. The last and essential link in the possibility is the use of microfilm for multiplying the cards under various classifications and in copying for distribution. I repeat that this is a large project needing international thought and probably years of gestation. Classification, the technique of bibliography, and a dozen other factors in documentation to which many have unselfishly given their lives will find fruition in such a project.

In the accomplishment of such objectives, if they are deemed worthy of accomplishment, it is fortunate that there is the spirit and willingness to work together expressed by so many organisations and individuals. I appreciate this opportunity to present my views before such an organisation as ASLIB.

Meetings of the International Institute of Documentation and the World Congress of Documentation provide other helpful channels for the exchange of ideas and the arrangement of international co-operation.

Until this year America has not had an organization that has made documentation its major interest. The American Documentation Institute was founded on behalf of over sixty scholarly and scientific agencies, in various intellectual fields, which nominate its members and thus control it. It arose out of the need for a broad, energetic, and intellectually motivated development of all phases of documentation, particularly microphotographic duplication and its ramifications, in the fields of physical, natural, social, and historical sciences and the general sphere of libraries and information services.

It took over the functions of Science Service's Documentation Division on July 1, 1937. It operates Bibliofilm Service and the Auxiliary Publication Service which were operated by Science Service. The design and development of microphotographic apparatus carried on by Science Service with the co-operation of the Chemical Foundation, U.S. Navy, Bureau of the Census, Works Progress Administration, etc., is now being left in commercial hands. The American Documentation Institute will not engage in the sale and manufacture of apparatus, but will co-operate with all manufacturers and commercial concerns so far as practicable.

The American Documentation Institute will be able to serve as an informational clearing house on microfilming activities.

Activities not involving microfilm are planned. Auxiliary publication in co-operation with journals, societies, and institutions is contemplated, not only through the use of microfilm, but through the use of other methods of duplication. An investigation is being made into the needs of a document preservation center applying the technique of cellulose sheet lamination, etc., developed by the National Bureau of Standards for the National Archives.

I am confident that those of us who are interested in solving our problems, which are very similar on both sides of the Atlantic, will profit greatly by such discussions as this one in which you allow me to participate. You will find your American colleagues most interested in what you are doing and what is planned. I hope that there will soon be flying back and forth across the Atlantic, via the airmail lines now being pioneered, little pill-boxes of microfilm as large in importance to the exchange of organized knowledge as their pages are small.

CONTRIBUTION TO THE DISCUSSION ON DR. WATSON DAVIS'S PAPER.

By Dr. L. A. Sayce, *King's College, Newcastle-upon-Tyne.*

For about five years we have made constant use of microphotography in the library of Armstrong College (now King's College), Newcastle-upon-Tyne, and it has been suggested that our experience may be of some interest. I cannot speak as a librarian; that is the province of my colleague, Mr. B. S. Page, but I have been rather closely concerned in developing the technical side of the subject.

The microphotography of documents is no new thing, for it was used with great success by Dagron during the Siege of Paris, and it has long been quite possible to reduce a page of print to less than a millimetre in height and read it under the microscope. But such extreme reduction is at present possible only with rather inconvenient methods, and the best photographic emulsions generally available allow of much less condensation. This is because the ordinary photographic image is made up of silver particles of finite size which on high magnification cause a " grain " or coarseness of the image. Thus a linear reduction of ten times causes no appreciable loss of detail, but a reduction of twenty times gives results like a poor carbon copy of a typewriter. As a result of this limitation the smallest size to which, say, a newspaper page can profitably be reduced is about an inch and a half by an inch, a size which just fits the ordinary thirty-five millimetre cinematograph film. Such film is cheap and abundant, and is used for the great majority of microphotographic work. Several cameras are on the market for doing this work; some are simple and inexpensive, whilst others are highly mechanised and almost automatic.

The negatives produced by these cameras can be used in several ways. They may be enlarged upon paper, giving prints that take the place of photostats, upon standard lantern slides for lecture purposes, or they may be printed by contact upon spools of thirty-five millimetre film and read by projection upon a screen. It is this last use which is engaging so much attention at the present time. Reading

spools of photographs by projection depends for its success upon the projector, and although considerable progress has been made, the ideal reading machine for library use, at once fool-proof, efficient, and inexpensive, has not yet appeared. When it does, the general utilisation of microphotography is assured.

It seems very probable, then, that librarians will make increasing use of cinematograph film ; but, in my opinion, it must not be regarded as a completely satisfactory medium for microphotography. Spools of film are the legacy of another industry which we have accepted for the time being ; but to preserve literature on a spool is to go back to the library methods of two thousands years ago. The scroll was replaced by the paged book, and our spools of film must be replaced eventually by a flat micro-record. From experiments which I have now in hand, with " grainless " emulsions, I am confident that a reduction ratio of a hundred will soon be quite practicable. But even with a reduction of sixty diameters we shall be able to print over five hundred pages of a book or technical journal upon a five-inch by three-inch film and file it in the drawer of a filing cabinet. A single drawer, in fact, will easily contain a dozen copies of the complete *Encyclopaedia Britannica*. Here, again, the greatest difficulty will be to design a satisfactory reading machine. But in many ways the problem is simpler than with spools of film : for once the film has been inserted between glass pressure-plates in the machine it will remain undisturbed and unscratched, and every one of its five hundred page images will be accessible even more easily than by turning the pages of a book.

By K. Stuart-Smith, B.Sc., *Recordak Division of the Kodak Company.*

It behoves me to confess that I know very little of library, newspaper, or indexing work. My interest lies in the development of fresh fields for the application of photography and, in particular, microphotography. As a representative of Kodak, Ltd., I have in the past attended one or two conferences somewhat similar to this one, with the object of ascertaining the particular photographic needs of this field, and of seeing to what extent the equipment which we have devised for this purpose can be used to serve those needs.

The outstanding fact which is impressed on my mind is the diversity of requirements manifested. One section wishes to photograph index cards, a second newspaper sheets, a third bound volumes, a fourth ancient manuscripts, and so forth. Again, some are thinking in terms of a small volume of items, and others of a large volume—some in terms of a large reduction ratio, and some otherwise. As the chairman in his introduction to this subject very aptly pointed out, it is extremely unlikely that one form of apparatus can be constructed adequately and effectively to cope with such a diversity of needs in the most economic manner. This in my opinion is very true.

It is usual in the development of new apparatus for marketing purposes to devise in the early days a simple and cheap form of apparatus dealing with only a small volume of work and, having established a market, to work up from these small beginnings to a robot machine capable of dealing with a colossal amount of work at a particularly economic rate. Now Kodak, which as you know is an international concern, has somewhat departed from usual practice in the case of microphotography, and has concentrated the bulk of its efforts up to date in the design and construction of mass production machines for doing this work.

The reason for this is, that about ten years ago American banking institutions realised that the copying of vital information from large numbers of documents could more economically be carried out by photographic means, were suitable equipment devised for the purpose. This resulted in the marketing in America by the Kodak Company of a machine known as the commercial " Recordak," capable of photographing 5,000 cheques per hour on to 16mm. film. This machine was placed on the American market in 1928 and its use has grown to such an extent that it may now be regarded as an integral part of the banking system. In early 1935 it was introduced into the British market, and is now firmly established in various banks, insurance companies, and commercial houses of this country.

In order to give you some idea of the capacity of these machines, I will tell you that in one of the City banks between 150 and 250 thousand cheques are photographed each working day in this way. In one particular section of the work the time allowed by the bank for photographing 20,000 items is seventeen minutes, a number of machines being used for the purpose.

I would like to devote a minute or two to a brief description of the principles involved in this type of apparatus. The machine utilises the system of continuous photography, which means that the document is photographed while it is in motion.

The document to be photographed is inserted in a hopper at the top of the machine, and is discharged into a receiving hopper within a fraction of a second of its original insertion. The operator requires no knowledge of photography, since apart from the loading and unloading of the camera, which is a simple operation accomplished in daylight, the operation resembles very closely that of posting a letter in a letter-box. It is just as simple and almost as speedy. The speed is limited by the manual dexterity of the operator in feeding the documents into the hopper. The length of the document fed into the machine is immaterial, since it will deal with a roll of paper 1,000ft. long as easily, though not as expeditiously, as with a small document. The width of the document constitutes a limiting factor, and this machine is only suitable for documents which do not exceed 10½in. in one dimension, that measurement being the width of the receiving hopper. The film, which is panchromatic and on safety base, is processed in our factory at Harrow, and when received by the sender is viewed for reference purposes on a self-contained projector of which one type will be on view this afternoon.

A few years after the introduction of this machine on to the American market, the American newspaper world began to take an interest in the microfilming of both old and current files of their newspapers. Consequently a larger model of the "Recordak" was evolved known as the Newspaper "Recordak," which uses the same principle of continuous photography as its smaller edition. This machine is suitable for newspaper sheets and utilises 35mm. film. No American newspaper up to date has sufficient volume of work to keep this machine busy, so work is sent in by the various newspapers to our factory in Rochester to be photographed. You will be able to see the type of work turned out by this machine when you view the projector this afternoon.

Subsequent to the introduction of the Newspaper "Recordak," in order to accommodate those newspapers who kept their old files in bound volumes, a third machine was devised known as the Micro File "Recordak." This is different in principle from the other two. The volume to be photographed is placed on a horizontal platform under a camera which is moved up and down a vertical column. The camera uses 16mm. or 35mm. film, as desired, always panchromatic and on safety base, and accommodates film perforated on one side, both sides, or unperforated film. The bound volume automatically shuttles to and fro in a horizontal direction, successively bringing alternate pages underneath the camera. The exposure and film take-up in the camera are automatic, so that all that is necessary is to successively turn the pages at the right moment.

Now you will gather from what I have said that Kodak has already devised equipment for dealing with any comprehensive scheme put forward, and we shall be glad to place our experience and abilities in this field at your service.

DISCUSSION.

The Chairman of the session was Professor R. S. Hutton, whose introductory survey is printed on p. 96. Mr. Watson Davis was, unfortunately, unable to be present at the Conference, but his paper, to which the Chairman referred, had been circulated to all present, and was therefore taken as read. Dr. Leonard Sayce and Mr. K. Stuart-Smith gave some further accounts of the present position of microphotography, which are printed on pp. 104 and 105. The subject was then thrown open for general discussion.

Mr. H. Rottenburg spoke of the importance of copyright in this connection, and suggested that ASLIB should invite representatives of Authors' Associations to join in a symposium on this question.

Dr. E. E. Lowe asked whether the permanence of the image was equal to the life of the film. The question was answered by the Chairman, who referred to the work of the U.S. Bureau of Standards.

Mr. B. C. Curling asked if the time taken as quoted included processing. Mr. Stuart Smith replied that the time of processing was provided by the twenty-four-hour service.

Mr. Charles Nowell spoke of the difficulty of taking photographic copies of bound volumes—was it necessary to strip the binding? He remarked that speed was not the chief necessity for libraries—a cheap duplicating method was what was required. The Chairman answered the first point by mentioning the Recordak Bookholder, specially designed for the photographing of bound books.

Mr. Theodore Besterman asked whether it was physically possible to photograph pages where the binding was tight. Dr. Leonard Sayce answered that books

need only to be opened to 90° with the page flattened by plate glass for a satisfactory photograph to be obtainable.

Mr. Edward Carter asked if any microphotographic colour film experiments had been made. Mr. Stuart Smith said that successful experiments had been carried out with microphotographs of illuminated manuscripts.

Mr. Norman Parley described briefly the photographic methods in use for reproducing (a) books and documents, (b) manuscripts, by litho-offset and collotype printing processes. He said that if microphotography appeared on next year's programme its possible application to facsimile editions by litho-offset might well be borne in mind, for rare or out-of-print books.

EXHIBITION OF MICROPHOTOGRAPHIC EQUIPMENT.

To illustrate the discussion of the subject of microphotographic processes in documentation, a collection of some of the leading forms of apparatus had been organised by Professor R. S. Hutton and were demonstrated during the afternoon of Sunday, September 26th.

The Association is particularly grateful to the firms and individuals who kindly sent exhibits for this purpose and in most cases sent representatives to demonstrate and explain their use. In addition, large photographs were shown of other cameras and reading projectors which have been made available for library use or for micro-film production on a large scale.

The main exhibits were as follows:

1. *S.R.S. Micro-film Camera,* by Mr. L. de Saint Rat and Dr. Atherton Seidell, Pasteur Institut, Paris. Loaned by Dr. Atherton Seidell, National Institute of Health, Washington, D.C., U.S.A.

2. *Folmer–Graflex Portable Micro-film Camera,* by Folmer–Graflex Company, Rochester, N.Y., U.S.A. Loaned by the British Museum and demonstrated by Messrs. Monger and Marchant, 8, Breams Buildings, London, E.C.4.

3. *Recordak Projector Reading Machine* (*Newspaper Model*), by Messrs. Kodak, Ltd., Recordak Division, Adelaide House, London, E.C.4, and demonstrated by Mr. E. Stuart-Smith, B.Sc.

4. *Combined Enlarging and Reading Machine,* by Messrs. E. Leitz, 20, Mortimer Street, London, W.1, and demonstrated by Mr. M. Wiedling.

5. *Hand Reading Magnifier* for inspection of micro-films by Dr. Atherton Seidell (see above).

Notes on the Storage of Pamphlets and on the Preservation and Restoration of Books and Documents.

By B. M. HEADICAR, F.L.A.

The Storage of Pamphlets.

Pamphlets received into an information bureau or commercial library do not require to be accessioned, catalogued, or classified. They are not usually kept for any length of time, generally being superseded by other material of later date. The best way of keeping them is in the vertical file, which consists of a series of manilla folders 14in. by 9in., with an expansion of 1in., the front edge being ½in. shorter than the back, on which the subject heading of the material contained in the folder is written. The file itself should be of what is called the "legal" size, 10½in. high, 15¼in. wide, and 24in. deep (inside measurements). Steel files are generally to be preferred. They are cheaper than wood and take up less space, half an inch of floor space being saved on each cabinet, wood being a good deal thicker than the metal. If the folders are arranged alphabetically under subjects, reference from the alphabetical card catalogue is easy. All that is required being "see also V.F.," no matter whether there is only one pamphlet or a considerable number.

In those institutions where permanent preservation of the pamphlets is desirable other methods must be introduced. The less important documents should be kept in boxes, of which various kinds are on the market. The well-known box with the lid folding back is not only inconvenient to use, but is also expensive, although it has the merit of being more or less dustproof. They may, of course, be obtained in various sizes, but where economy is strictly to be enforced, the "drop case" is recommended. This is closed on three sides and only open at the back. Where the box fits close up to the back of the shelf there is not much trouble with the dust problem, and as they cost very little there is a great saving in expense, especially where there is a large number to be housed. To get over the dust difficulty many people use a double box, the pamphlets being placed in a smaller case which fits into the open, or back end, of the "drop case." This means more expense and more space for shelving, as fewer pamphlets can be accommodated in a single case of the same size. The boxes and their contents should be classified and catalogued in the same way as the books would be. If money is available in plenty there is nothing better than steel filing boxes, with index folders inside and a special spring clip to keep the contents from bending or falling about.

Many libraries bind pamphlets in volumes, in more or less classified form, but the main objection to this arrangement is that if two pamphlets are required at the same time from the same volume by different readers one has to be disappointed. Pamphlets of special importance and those requiring permanent preservation can be provided very easily and cheaply with a stiff cover which serves the same purpose

as binding, even if not so ornamental. Procure two pieces of millboard the size of the pamphlet, bore a hole top and bottom through the boards and the spine of the pamphlet, about half an inch from the back, and thread a narrow piece of strong tape through the holes. This will give you a substantial cover. If the pamphlet has a printed cover this may be detached and mounted on the face of the board, or a title label may be affixed to the top left-hand corner, thus making identification fairly easy. Books of several hundred pages with paper covers are very often too " weak in the knees " to stand upright on the shelf, and they are best treated as pamphlets, the title label being placed on the spine. There are various kinds of self-binders on the market, but the use of these in large numbers becomes very expensive. Photographs, facsimiles, and similar reproductions may be mounted on boards, 11in. by 14in., often able to accommodate two or three items on one board. It is very important to use a dry mounting, such as gum tissue impressed with a hot iron—as the ordinary method of wet mounting causes expansion of the board when wet, and shrinkage when dry, with consequent warping.

Very large documents, such as maps, may be conveniently filed in large cardboard boxes, laid flat in drawers, with folders of manilla to hold the different pieces. Manuscripts are generally best kept in metal cases, or airtight flat boxes. The use of cellophane wrappers will help considerably in the preservation of this material, and wherever possible photographic copies of the originals should be made for the use of readers.

The cost of the " drop cases " I have mentioned averages about threepence each. Two sizes (10in. by 6in. and 14in. by 9in.) will accommodate all but about five per cent of the pamphlet material usually received in a library. Larger items can be dealt with in the way just mentioned. The cost of " home binding " a pamphlet will average about twopence. In both these instances it means that a given sum will suffice for four or five times the quantity of pamphlets than is possible by other methods.

The Preservation and Restoration of Books and Documents.

The following hints on the preservation and restoration of books and documents all require some dexterity of manipulation. It is therefore most important that, before attempting to apply them to anything of value, time should be taken to experiment on valueless material. The recipes themselves have either been extracted from various sources during my librarian life or have been discovered by myself, sometimes quite by accident, but they have all been tried and not found wanting.

To Clean Vellum.

Milk, applied with a clean piece of white cloth will clean the oldest vellum as new, provided marks are not chemical stains. A fine sponge dipped in benzine will also be effective.

Torn Edges or Leaves.

Apply a very small quantity of Gripfix or other good, stiff paste with a matchstick. Lay tissue paper above and below the tear.

Allow to dry and then tear off in the direction of the rent. The join should be almost invisible.

Discoloured Hand-painted Initials and Ornaments.

These frequently become blackened by exposure. Touch lightly and quickly with hydrogen peroxide, using a camel-hair brush. If this has no effect, warm the back of the vellum or apply a smooth hot flat-iron to the surface, barely touching the liquid. The original illumination should revert to all its beauty. Any liquid left can be absorbed by blotting-paper. Leave to dry.

Restoring Writing on Old Deeds and MSS.

Lay the paper flat. Damp evenly over with cold water. Apply camel-hair brush dipped in solution of sulphide of ammonia. The writing will immediately appear plain and readable.

Preservation of old Parchments.

Old parchments, bound or unbound, should be kept in air-tight and dustproof cases. Tin boxes, glass cases, or dustproof drawers are suitable.

Care of Books.

Bindings should be preserved. Spots of grease or wax generally disappear if a hot iron is held close to the surface. If not, damp with benzine or ether. White of egg used as a varnish restores the lustre of morocco leather bindings. Olive oil or vaseline applied sparingly will prevent cracking. Rough, dirty edges of books become quite smart if well glass-papered. Also dirty thumb-marks, writing ink, etc., can be removed by placing a piece of cardboard under the leaf and rubbing gently with glass-paper. Care must be taken not to rub a hole. Ink removers can be purchased and are very effective if the ink stain is not of great age. Be sure to put a piece of blotting-paper under the leaf being treated. For dog-eared leaves and pencil point marks use a sponge, dipped in water with a little gum infused. This stiffens the paper. Flatten the leaves, place a piece of smooth white paper between each leaf, and press. Creased or crumpled leaves can be restored by the use of damp blotting-paper and a fairly hot iron. When leaves or margins of old books are worn or decayed from natural causes, use strong tissue paper, same size, pasted on both sides.

Copying Old Writing.

Wet the paper with a weak solution of sulphate of iron and sugar syrup. Apply evenly with a sponge or brush. Use unsized paper and press as usual.

Copying Printed Matter.

Use an absorbent paper. Damp the surface with acetate of iron in weak solution. Press it in a copying press, or under weights.

Removal of Stains.

Grease spots—mineral naphtha, benzine, ether, will all dissolve oils, wax, tallow, lard, etc. Use cotton wool, dabbing carefully.

Indian ink can be removed by a brush dipped in warm water. If unsuccessful, brush over with oil, give the ink time to soften, and then remove the oil as grease.

Finger-marks—when rubber or bread fails, make a jelly of curd soap, wash in cold water containing a little carbonate of soda. If the stain is obstinate use a camel-hair brush.

Mud—use a soapy solution and a soft brush. Rinse, dry, and size.

Oil stains that have penetrated throughout the book. Take each leaf separately, roll it and place it in a wide-mouthed bottle half-full of ether. Shake the bottle and the oil will be found to have disappeared from the leaf on withdrawal.

Oxalic acid, citric acid, tartaric acid, will remove every trace of dirt without in any way acting on printers' ink—so don't use benzine or turpentine on poor paper.

Worm-holes or Perforations.

Place a tile or flat slate under the leaf with holes. Make a paste by taking paper of the same quality (the fly-leaf can sometimes be used), reduce it to a fine powder and work it into a paste with good flour paste containing a little clear white glue. With a sharp knife fill in the holes with the paste.

Fire-proofing Valuable Pamphlets.

Soak the leaves in a bath of alum. Dry without washing. Books will then not burn unless pulled to pieces first.

The Work of the British Council.

By Lieut.-Colonel CHARLES BRIDGE, D.S.O., M.C.

I was much pleased at the invitation to address the Fourteenth Annual Conference of ASLIB and at the opportunity offered me of telling you something of the work of the British Council. I am also greatly flattered at the presence in the chair of Mr. Will Spens, himself a distinguished member and valued adviser of the Council.

May I begin with a short personal introduction by telling you that it is particularly pleasant to speak to you at Cambridge, because we have a small family joke at home in that I always describe myself as a Cambridge man, though in fact my education, such as it was, was carried out at the Royal Military Academy, Woolwich; but I was, for a few weeks in 1918, at this very College—Gonville and Caius—when I was at the Staff School, for training young regimental officers for Staff work in France. I occupied a room in the Court of Honour and you can easily imagine what a pleasant change that was from the less agreeable conditions across the Channel. My home is now only twelve miles from Cambridge and I can, therefore, almost claim to be addressing you in my "Home Town," in my own University, and even in my own College!

Now to turn to the work of the Council. First, it is, of course, a very young organisation, of which I was actually the original official. In November 1934, I started work with one typist in a small office in the Strand. The Government Department responsible for the establishment of the Council was the Foreign Office, though it received the enthusiastic support of several other Government Departments, such as the Board of Education. The Foreign Office acted on the advice of several of our Diplomatic Missions abroad and on that of various trade Missions, and particularly those to Egypt and South America, whose reports showed what a lot of ground this country was losing overseas by our failure to tell the foreigner more about ourselves—about our ideals, our methods of government, our achievements and our outstanding contributions to the advance of civilisation; in other words, to the cause of peace, or to what almost amounts to the same thing, of peaceful trade. A start then was made in November 1934, with generous donations from a few private individuals, and after a month or two of work, H.M. Treasury informed the Foreign Office that for the financial year 1935–36 they were prepared to make a grant of £5,000 to launch the Council on its way. This sum, small as it was, was in reality even smaller by reason of the fact that it included the £1,500 already placed annually at the disposal of the Foreign Office for the support of such activities as the sending abroad of an occasional lecturer and the presentation of books to libraries in foreign countries.

The Council was fortunate in its first Chairman, Lord Tyrrell, formerly private secretary to Lord Grey—when he was Secretary of State for Foreign Affairs—and subsequently British Ambassador in Paris. With the small Treasury grant of £5,000 to which I have referred, reinforced by an important donation from Sir John Power,

the Council were able to draw up a small programme of Lectures, Book Presentations and Student Bursaries. For the year 1936–37 the Treasury increased their grant to £15,000, and with further donations from such public-spirited individuals as Lord Wakefield and one or two business firms, the Council were able for that year to expend on actual cultural activities abroad (exclusive of overhead expenses) a sum of over £20,000.

You will wonder what this initial programme included and how it was planned, and I think, therefore, the best thing for me to do is to read to you the objects which the Council has set before itself.

> To make the life and thought of the British peoples more widely known abroad; and to promote a mutual interchange of knowledge and ideas with other peoples.
>
> To encourage the study and use of the English language, both in foreign countries and in the Crown Colonies and Dependencies; to assist overseas schools in equipping themselves for this purpose; and to enable students from overseas to undertake courses of education or industrial training in the United Kingdom.
>
> To bring other peoples into closer touch with British ideals and practice in education, industry and government; to make available to them the benefits of current British contributions to the sciences and technology; and to afford them opportunities of appreciating British literature, fine arts, drama and music.
>
> To co-operate with the self-governing Dominions in strengthening the common cultural traditions of the British Commonwealth.

Put shortly, these objects are expressed in the words "cultural propaganda," and I would particularly emphasise the word "cultural" because the word "propaganda" has earned an evil reputation for itself, and is almost universally regarded as being primarily of a military or political nature. Of military propaganda, the Great War furnished many bad examples, such, for example, as the story put about that the Germans were boiling down human carcasses to provide the fats necessary for their munition production, which I for one firmly believed at the time. With such kind of propaganda, of course, the Council has nothing to do, nor with the political propaganda for home consumption of the sort referred to by Hitler in "*Mein Kampf*," where he wrote that "an efficient propaganda campaign can make a people believe anything." Nor have we anything to do with such activities as those apparently being carried on by the German *Auslandsorganisation*, which is intended to persuade Germans living abroad to accept the political doctrines of the party in power at home. The British Council's work, however, except for one of its most important activities, namely that of bringing overseas students to the United Kingdom, is primarily abroad, but is principally of an informative or educational nature, and is based on the spread of a knowledge of the English language.

I am sure you all will agree that the isolation on which this country formerly prided itself, and which is still advocated by certain would-be leaders of public opinion, is no longer possible. We are now forced to take our share of the worries and anxieties of the rest of the world and are, therefore, clearly bound to inform ourselves about conditions in other countries. At the same time, it is equally true that never

before has the rest of the world looked with such urgency towards us who in this age of instability have remained stable, and it seems to be our duty, as well as our interest, to try to satisfy the demands on the part of others for fuller information about our national life, character, ideals, institutions and achievements.

In our attempt to do this, we cannot do better, I think, than take a leaf out of the Frenchman's book, for the French have for a long time been supreme in the field of cultural propaganda. There is in France an organisation called the *Alliance Française,* founded in 1883, which now has a membership of nearly 600,000, with Societies, Institutes and Libraries in nearly every important country in the world. In 1936 the *Alliance Française* disbursed in its work abroad the sum of six million francs, while in the French Budget for the same year eighty-two million francs were ear-marked to be spent abroad on cultural work, and of this sum, thirty-two and a quarter million was for *Œuvres françaises à l'étranger.* The Italians have proved to be apter pupils in this matter than ourselves and formed, shortly after the War, an organisation corresponding to the *Alliance Française* known as the *Dante Alighieri* Society, the Council of which includes one member of the Fascist Government, so that it is more official than the *Alliance Française.* The *Dante Alighieri* was granted a Royal Statute in 1933, and is directly responsible to the *Duce.* Another important body of the same sort in Italy is the *Istituto del Libro,* which organises book fairs, creates libraries and encourages literary production. We do not know what Government appropriations the above have, but they are certainly considerable, and the Italian Budget for 1936 contained a sum of sixty-nine million lire, at that time worth about £1,000,000, for the purposes of cultural propaganda and prestige. Of this sum, thirty-nine million lire were earmarked for the support of Italian schools abroad.

But France and Italy are not by any means the only Powers expending large sums on cultural activities. I might mention in passing the Rockefeller and Carnegie funds in the United States of America, each with a capital of over thirty million pounds sterling, which expend large sums of money annually in promoting the study of international affairs in foreign countries. As an example of the perfectly legitimate but none the less, to us, provocative sort of work which they do, I may refer in parenthesis to the scholarships offered by the Carnegie Fund to West African students at American Universities, which have created the impression that the U.S.A. are more anxious to establish contact with African students than we are.

In Japan, an organisation similar to the British Council was founded in April 1934—eight months before us—with a capital fund of nearly £60,000 and the support of the Japanese Government and many of the leading men in Japan. The section of the Japanese Foreign Office concerned with cultural intercourse with foreign countries was voted in 1935 the sum of £60,000, of which a large proportion was to be expended on the establishment of Chairs of Japanese culture abroad, the exchange of professors and students and the provision of improved facilities for the teaching of the Japanese language in Siam, India and the Philippines.

The figures I have given are in striking contrast to the derisively small sums of money available in this country until now for similar

purposes, and it is therefore not surprising that there is much lee-way to be made up. Egypt is, of course, the classic example of our neglect; in the words of an American writer "the French pen in Egypt has been mightier than the English sword." In spite of the special position which we have occupied in Egypt since 1882, we have, until recently, entirely neglected our opportunities for bringing ourselves into closer contact with the Egyptians. The French have had an educational philosophy, we have had none. As a result, the British schools in Egypt are at a lamentable disadvantage compared with the French and with the Italian, both religious and secular. They are not even sufficient to give an English education to all British subjects in Egypt, and it is therefore not to be wondered at that the number of Egyptians educated in the British schools decreased by ten per cent in the period 1927 to 1930, while those at the French schools increased by ten per cent and those in the Italian schools by twenty per cent in the same period. Over this period, the ratio of French-educated Egyptians to English-educated Egyptians was nine to one. Now the position has improved, or rather means have been found to improve it, and this year—1937–38—the British Council is in a position to assist both British and Maltese schools in Cairo, the British and Scottish Boys' Schools at Alexandria, and the Maltese Schools at Port Said and Suez. We hope also to help the British School in Palestine, two schools in Transjordania, and two schools in Constantinople. We are giving assistance also to the education of Maltese children in Smyrna.

Just before Lord Eustace Percy (who was the successor in May 1936 to Lord Tyrrell as Chairman of the Council) was compelled by his appointment to the Rectorship of King's College, Newcastle, to resign the Chairmanship, the Treasury informed us that our grant for 1937–38 had been increased to £60,000. This means that we can now count on an assured income and are thus able to lay our plans on a more ambitious scale. In addition to the increased Treasury support, the Council under the Chairmanship of Lord Lloyd (who succeeded Lord Eustace Percy last July) have been successful in collecting considerable further sums from private individuals, with the result that we can look forward to the future with greater optimism; but I do not want you to think that the Treasury grant is by any means sufficient for our needs or that we shall not, at any rate for many years to come, have need of further private support in order that the work which we have commenced may be effectively carried on.

Before trying to give you a survey of the way in which we work, I think, as I have been insisting rather on the financial aspect of our problems, it would be as well to tell you about one or two of our activities which cost little or nothing. The first paper I laid on Lord Eustace Percy's table when he assumed the Chairmanship in May 1936 was a report from Tokyo regarding the unsatisfactory conditions in which teachers of English serve in Japan. The report pointed out that French and German teachers, being members of a State Education service, had behind them the full support of their respective Governments, while the English teachers suffered severely in prestige from the lack of such support. To such a low level had the status of English teaching fallen that in some Japanese schools it was even being given up. Lord Eustace Percy, with the wide experience he had acquired during five years at the Board of Education and that quick

enthusiasm which he is always ready to afford so generously to anyone deserving help, immediately arranged to send invitations to local education authorities and to the Associations of Teachers and schools in this country to meet representatives of the Board of Education and other Government Departments, at the offices of the Council, to see what could be done to improve matters. As a result of this Conference, an Advisory Committee on the Status of British Teachers Abroad has been formed, and this Committee has already recommended the adoption of a system of seconding teachers for foreign service, with a guarantee of re-employment on their return. A circular outlining this scheme has already been issued by the Council to local education authorities in England and Scotland with gratifying results. As regards the superannuation rights of teachers in publicly maintained and aided schools in the United Kingdom, an amending Act has already been passed by Parliament, extending the period for which superannuation rights may be kept from four to five years, or for such a longer period as the Board of Education may direct. It has also been agreed with the Burnham Committees and the Scottish authorities that they will recognise foreign service for salary increments. You will, I am sure, appreciate the importance of the foregoing as regards the status and prospects of British teachers who accept posts in approved schools abroad.

In addition, the Council has made itself responsible for the selection of masters for British schools in Egypt, Greece and Estonia, and have also helped in the organisation of hospitality for foreign students coming to this country.

Abroad, the framework of the Council's organisation is represented by the Anglophil Societies in foreign capitals, such as the Finnish-British Society in Helsingfors, the Swedish-British Society in Stockholm, and on the important cultural Institutes already in existence for some years in Florence and Paris, about which I shall have something to say later. In South America, there are firmly established cultural Institutes at Buenos Aires and Montevideo, and similar smaller Institutes have more recently been founded at Rio, Sao Paulo, Santiago and Lima, while in Nanking there is a Sino-British Cultural Association. This will show you that the scope of our work is already considerable. In the United States we have not, up to the present, done anything; firstly, there is in New York the British Library of Information, which is in direct touch with the Foreign Office and which provides those in America desirous of information about this country with all they need, and secondly, as you know, the flow of English lecturers to America is continuous, though perhaps not always of first-class quality. For this reason, the Council has concentrated its work in the early years of its existence on less favourably situated countries, and for this reason has only quite recently paid attention to France. There are already many strong ties which bind us to that country, and there are in existence the United Associations of Great Britain and France, and the British Institute in Paris, of which, as you know, Dr. Granville Barker has recently been appointed Director. There is a constant interchange of distinguished visitors between the two countries which already makes the Council's work in France if not superfluous, at any rate less urgently necessary than elsewhere. We have, however, been able to make an important donation of books to the Library of

the British Institute and we have also been responsible for the arrangement of lecture-tours in France.

Returning to the other countries of Europe, I must again refer to the British Institute in Florence and to the Anglophil Societies in the various capitals which, as I have said, form the framework of our organisation abroad. In Florence, there is the British Institute with a Royal Charter, established in 1918 when there was still a Ministry of Propaganda in existence in this country. After a very encouraging start this Institute was abandoned by the Government on the grounds of economy in 1921. Its existence was saved by the intervention of the late Sir Walter Becker and other public-spirited donors such as Miss Courtauld and Sir Daniel Stevenson. For the past nineteen years this Institute has been doing admirable work in the teaching of English to Italian student-teachers. In 1935 the Institute turned out 216 qualified teachers of English, and in spite of the political tension which has existed between the two countries for the past few years, is still continuing its excellent work. The Institute has for the last three years been in receipt of a small annual subvention from the Council and this year, with the increased funds at our disposal, we are in a position to offer it additional assistance to enable it to develop its activities in Florence and to extend them in other cities in Italy.

As regards the Anglophil Societies in Europe, which now number 196 in twenty-three countries, and with 100 of which we are in close touch, it is on these Societies—on the advice of the British Embassy or Legation—which the Council depends for recommendations as to the activities they should pursue.

The Council are also helping to establish lectureships and professorships at foreign Universities, which in some instances include the management of Institutes of English studies connected with the Universities. Duties of this kind are discharged by the contracted Professor of English at the Institute at Coimbra—the Oxford of Portugal—and steps are now being taken to found an Institute of English Studies at the University of Lisbon. In the Technical University of Lisbon, a British room already exists, opened two years ago with the help of the Portuguese Government and of British residents and business firms trading with Portugal. The Council are jointly responsible with the Danish Government for the lectureship of English at Copenhagen University and they have recently founded a Chair of English at Bucharest University, and just a few months ago the Byron Chair of English at the University of Athens, of which the first occupant, Dr. M. V. Routh, of King's College, London, has just arrived in Greece. Their activities as regards British schools abroad have, until this year, been very restricted and have been limited to the support of two such schools—one in Portugal and one in Holland, but we have been able to make grants to assist the education of poor British scholars in Argentina.

The Council itself is composed at present of representatives of seven Government Departments and eighty-five other members. There is an Executive Committee and a number of Advisory Committees. The Executive Committee takes decisions on all matters of policy and finance, on the advice of its two regional Committees, namely the Near East and Ibero-American Committee, and its eight functional Committees, to the activities of which I will now briefly refer.

The Students Committee, which is responsible for stimulating the flow of overseas students to this country, has up to the present, owing to the relatively small sum which the Council have been able to place at its disposal, had to content itself with the giving of bursaries to selected student-teachers of English from overseas to come to this country for one term, to follow a course of English literature and philology at the three University Colleges of Exeter, Southampton and Nottingham, which cater specially for such students. This year, owing to the increased appropriation made for student activities, it has been possible to increase the number of student-teachers whom we are bringing to the country to eighty-three, but more important still, it has been possible in most cases to prolong the period for which they come here from one term to one year. Thus our scheme for improving the standard of the teaching of English in schools overseas—including Colonial schools—is well on its way, and with the increased sums which we confidently expect to be able to place at the disposal of the Students Committee, there is no doubt that these activities will be greatly extended.

Another of the Council's important activities is the sending of distinguished lecturers abroad, for which its Lectures Committee is responsible. In 1936–37 we were able to send nineteen such lecturers. For reasons of expense it was only possible to send these lecturers to European countries, and for this purpose Europe has been grouped into a number of lecture circuits. The lecture-tours demand an absence from England of three weeks to a month and you will appreciate how grateful the Council are to the distinguished people who have given so freely of their time to go abroad to interpret some phase of British life and achievement to foreign audiences. It is by no means easy to get them, because the periods for which they are generally able to go coincide with the University vacations abroad, and it is to the University audiences that we particularly like to send them. In the case of South America it is, of course, easier because there the cold weather corresponds with the holiday season in England, and it has been possible in the past for the Ibero-American Institute of Great Britain, which has now become the Ibero-American Committee of the Council, to arrange for such distinguished speakers as Lord Macmillan and Sir Richard Redmayne to visit the Argentine, Brazil and Uruguay, and to lecture there; but the expenses of a South American tour are, of course, high and they thus represent a luxury which we are not able often to afford. A subsidiary branch of our lectures activities is represented by the lantern lectures with script, compiled by the Council's staff and others, for use by local speakers abroad in the premises of the Anglophil Societies to which I have referred. We have also arranged for copies of the broadcast talks prepared by the Travel and Industrial Development Association to be sent out and for gramophone records made by distinguished British speakers to countries not normally accessible to visiting lecturers.

Another functional Committee of the Council whose principal activities are abroad is the Music Committee, which comprises among its members such distinguished British musicians as Sir Walford Davies and Dr. Vaughan Williams. This Committee was responsible in 1936–37 for arranging concert tours in Europe by five outstanding British artists. Other means of familiarising foreign audiences with

British music and musicianship were the issue of sets of gramophone records to Broadcasting Companies, which arranged concerts of English music in eighteen different countries. Gramophone records ranging from folk-songs to contemporary music have also been presented to Anglophil Societies, and successful efforts have been made to interest foreign conductors and artists in British compositions by the loan of music scores from the Council's Music Library for inclusion in concert programmes.

The Fine Arts Committee of the Council were responsible last year for two important exhibitions of British Art abroad. This responsibility they have, at the request of the Government, taken over from the Department of Overseas Trade. In April 1936, an exhibition of "British Graphic Arts from 1735 to 1935" was taken to Prague and Vienna, and in September 1936 the Fine Arts Committee made itself responsible for the British Art Exhibit in Johannesburg. This exhibition consisted of works of artists living in 1900 or later, and was seen by 55,000 visitors.

I have left to the last, as a *bonne bouche*, reference to the Books and Periodicals Committee of the Council, because it is to this Committee that ASLIB has so generously given its support. The object which the Committee have in view is to build up libraries of English books abroad and for this purpose presentations last year were made to ninety-seven institutions in thirty-seven countries. Another branch of the work is to increase the circulation of British periodicals, and 2,800 periodicals of a general, learned or technical description are now being supplied to 663 institutions in fifty-one countries. We also supply Bibliographical information and endeavour to increase book reviews in the foreign press. A Bibliography entitled "British Civilization and Institutions" has been compiled with the assistance of a number of experts and with that of the National Book Council, a suggested list of books to form the basis of English libraries has been drawn up. As you know from your *Bulletin*, ASLIB have given valuable assistance in selecting technical books suitable for countries as remote as Afghanistan and Irak, Poland and Argentina, while your panel of book selectors has compiled a short standard list of British technical books from which selections may be made for Technical Training Institutions and Scientific Bodies in some twenty countries. It seems that these presentations will assume considerable importance in the future, as they will bring British industrial methods to the attention of technicians in many countries which have previously looked to our competitors, and here I should like to remark that the great difficulty of selection was due to the fact that in a number of cases British works dealing with industrial technology are considerably behind current practice. It is in this respect that our competitors have a special advantage over us. They have not been afraid to divulge the advances made in the application of science to industry, while we have been reluctant to do so. We have to recognise that so long as this country concentrates on quality production such reluctance is likely to continue, but in my opinion it is very much to be hoped that in the future the technical text-book may be used as a means of national advertising.

There is a further activity of the Books Committee of which I must tell you, and that is the arrangement come to with the National

Central Library in London for an extension of the loan facilities provided by the Library to foreign Universities.

Before closing, and in order that you shall not think that two of the most important agencies for our work have been forgotten, I must mention briefly broadcasting and films. To the use of gramophone records for broadcasting British music I have already referred and to the broadcast talks prepared by the Travel Association, which we have been able successfully to distribute. The use of broadcasting for legitimate propaganda purposes is, however, a difficult problem. Decisions as to the use which may be made of it still remain matters of " high policy," and I can only assure you that its possibilities have not by any means been left out of our calculations ; we are in the closest and most amicable relations with the authorities at Broadcasting House.

As regards films, it would take too long to enter into the many difficulties in the way of increasing the circulation abroad of British films, both for theatrical and non-theatrical presentation, but in collaboration with the Travel Association, the British Film Institute, the G.P.O. Film Unit, with whom a joint committee has been formed, small numbers of documentary films, a few of them produced by the film unit of the Travel Association, have already been sent overseas to a few selected countries. The question resolves itself into one of a supply of adequate representative films and this is very largely a question of finance. The progress so far made is not considerable enough for me to tell you of it in detail. I only say this in order that you may know that the matter has not been forgotten.

I hope that I have been able to show you from the manner in which we are planning our cultural propaganda that we fully realise the importance of it being on a positive rather than a negative basis. The British Council's work must not be principally counter propaganda. This would be to cramp its effect and to misinterpret its aims. We want to be in a position to afford a British education to our own people abroad, to interpret our national point of view to those not of our race, whose collaboration it is essential we should have ; and to make known to British and non-British alike the full wealth of our traditional civilisation. These are tasks which any World Power should regard as due equally to its dignity as to its interests. That they have been neglected in the past is largely due to a natural carelessness in such matters and partly also to a too narrow confinement of our outlook to politics and commerce. It is the reparation of this past neglect which it is the British Council's task to correct. But the true measure of our success will be wider still, for the supreme interest of every one of us to-day is peace, an interest embracing all others. We are fond of asserting that the British Empire is the greatest force for peace in the world and this is widely recognised as being true. The force upon which we must rely is not the force of Government diplomacy or economic efficiency, but the force of the character of our people, of their alertness in thought, their moderation in action, their originality, and their public spirit. We have peace at home because we know one another at home and can trust each other to display those qualities. We shall have peace abroad only if we make ourselves equally well known abroad and inspire other peoples with the same feeling of confidence.

DISCUSSION

The Chair was taken by Dr. Will Spens, Master of Corpus Christi College, Cambridge. In the discussion that followed the reading of Colonel Bridge's paper Dr. G. Pratt Insh asked, in reference to the scheme for lending books to Continental Universities, whether any reciprocal arrangements had been made for the borrowing of books from these Universities on behalf of British students. It was the general experience, Dr. Pratt Insh said, of students working at any period of European history that while it was comparatively easy to obtain standard French historical works from the libraries of British Universities, it was by no means easy to obtain German historical works or Italian authorities; it was particularly difficult to obtain German books published in Switzerland: any scheme by which German or Italian authorities might be borrowed freely from Continental Universities would be a great boon to British students. Colonel Bridge said that no such reciprocal borrowing was in operation: the suggestion, however, was a most valuable one and he would see that its possibilities were fully explored.

Mr. C. H. Gray asked Colonel Bridge whether the British Council could not concern itself with the composition of delegations from this country to international scientific, technical, and economic conferences. He referred to a large conference with which he had himself been connected, held in the United States the previous year by direct invitation of the President acting under authority of a special Resolution of Congress. The British Government were invited by the American Government to appoint an official delegation of ten persons to attend this Congress. The procedure followed—and he had no doubt that the same procedure was followed in similar cases—was for the Government Departments interested to put forward the names of a few civil servants for appointment as members of the official delegation. So far as the appointment of the other official delegates was concerned, enquiry was made by the Secretary of the Economic Advisory Council as to who was in any case going from Great Britain, and invitations were issued to those selected from this list to represent the Government of the United Kingdom at the Conference. The official delegates received a letter signed by the Prime Minister, containing the statement that no part of their expenses would be met out of public funds.

This procedure contrasted very sharply with the procedure in all other important countries, from which, as a matter of course, large delegations were sent by the Governments themselves.

Mr. Gray suggested that the British Council might be consulted as to the appointment of Government delegates to such conferences as that to which he had referred.*

Further, the British Council could fulfil an extremely useful function by interesting itself in seeing that Great Britain was worthily represented by private members as well as by official delegates at really important international scientific, technical, and economic conferences. With its great prestige, the Council could do much to ensure the presence of eminent men and women who would otherwise be in doubt as to whether to spare the necessary time.

Mr. Gray said that the British Council could carry out the tasks to which he had referred without much expenditure of money—in many cases, without any expense whatever. He hoped, however, that as the Council's financial resources were strengthened, it might be possible for the presence at international conferences of younger scientists and technicians of ability to be facilitated by the making of grants to cover, or towards, their travelling expenses. The cost of attending these meetings, particularly in distant countries such as the United States, was necessarily high. But he thought that it was in the country's interest that the best men should not be prevented by financial considerations from being present. This, too, seemed to fall entirely within one of the "objects" of the British Council: namely, to make British scientific and technical progress known abroad.

Professor R. S. Hutton suggested that a programme of coming events in the United Kingdom, including annual or special meetings of learned societies and conferences, should aid in bringing many additional visitors to this country. He enquired if the British Council had attempted to arrange an exchange of scientific and technical books and periodicals with the German Notgemeinschaft der Deutschen Wissenschaft. A further suggestion was that the extension of exhibits of British

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* Mr. Gray writes that he is aware that the Government consults the Royal Society before arranging participation in purely scientific conferences. He would not, of course, for one moment suggest the discontinuance of that practice.

Government publications on the lines of the Library of Information in New York should be helpful if it included the Government publications dealing with science, industry, agriculture, etc.

Mr. B. M. Headicar said that Professor Hutton's remarks concerning the exchange of publications prompted him to ask Colonel Bridge if the British Council could be of any assistance in resuscitating the work of the Universities Library for Europe. It was established in 1921 by an influential Committee, and for some years Mr. Headicar had been the Hon. Secretary of the Library. Its objects were to promote the provision of books and the exchange of publications in those Universities in Europe which, first of all owing to the blockade during the Great War, and afterwards to the currency difficulties, were unable to obtain English books at all. The work was on a considerable scale for some years and only came to an end a year or two ago. The London School of Economics provided accommodation for the work and the collection of books, their packing and distribution was carried out by members of the Library staff of the School. The finance of the scheme was entirely dependent upon voluntary contributions, which gradually decreased as the charitable nature of the work became less and less important. Mr. Headicar said that he congratulated Colonel Bridge on his most instructive address, and more especially on his good fortune in being able to obtain such substantial financial support from the Treasury. His Council had been much more fortunate than Mr. Headicar's society in that respect. At no time was anything in the nature of funds forthcoming from official quarters. Occasionally the Foreign Office asked them to provide books or funds for books for particular objects —notably for the grant of books to a British Workmen's Institute at Gijon, for the supply of English books and periodicals at the University of Cluj in Roumania, and for the establishment of an Anglo-Austrian Society in Vienna. At the request of the Foreign Office Mr. Headicar had called at the British Embassy at Vienna in regard to the project and made tentative arrangements for the accommodation of the society, readily offered by the Hofbibliothek. In no case was the Foreign Office prepared to assist financially, and were unable even to arrange for the delivery of any books collected through the courier service, as they had had every reason to hope. The British Consul at Cluj (or somewhere in Roumania) sent a plea from Cluj for a supply of English scientific and literary periodicals, enclosing a list of 121 periodicals regularly supplied by France gratuitously, and three from this country. The English list consisted of the *New Statesman, Punch,* and, I think, the *Daily Mirror*. In a letter to the Foreign Office the propaganda value for French ideas and culture as compared with our own list was pointed out, and the reply was to the effect that once propaganda was mentioned it became an international question. Mr. Headicar believed that there was no better way of fostering international conciliation than by a free exchange of scientific thought by means of periodicals and books. So keen were the European countries to develop friendship on these lines that they willingly paid for the carriage of consignments both ways rather than lose the chance of obtaining the English literature they so much needed. Frequent suggestions had been made here as to the desirability of continuing the exchanges on a systematic basis, and Mr. Headicar very much hoped that the British Council would see its way to assist in getting the Universities Library for Europe, or some similar body, functioning again.

The Chairman, Dr. Will Spens, said the immense part that Lieut.-Colonel Bridge had played in the organisation of the work of the British Council had contributed very largely to its success. The work of the British Council was most important, and the collaboration of the Council with many diverse bodies was capable of making a great difference, and he felt its influence would be of world-wide benefit.

The meeting concluded with a very cordial vote of thanks to Lieut.-Colonel Bridge for his most informative and interesting address.

Final Session and Round-table Meeting.

At the final session of the Conference the Chair was taken by Mr. A. F. Ridley. The delegates passed votes of thanks to the Master and Fellows of Gonville and Caius College for their hospitality in allowing the Conference to be held at the College, and to the President of ASLIB, Sir Harry Lindsay, for his kindness in attending the meetings. Votes of thanks were also passed to the authors of papers, the Chairmen and Stewards of meetings, and to Miss Bradbury and the staff of Caius College. A special vote of thanks was passed to Professor R. S. Hutton for his help in the local organisation of the Conference and particularly for his indefatigable energy in organising the session and exhibition on Microphotography.

The Chairman referred to the fraternal greetings that had been received from the Special Libraries Association of America. It was unanimously agreed that reciprocal greeting should be sent.

The formal proceedings of the Conference then ended but on the Monday morning a Round-table Meeting was convened to discuss the proposals for the reorganisation of the ASLIB Panel of Expert Translators. Twenty-four delegates were present. As a result of the Round-table Meeting held at the 1935 ASLIB Conference a thorough investigation of the Panel had been carried out by a Committee appointed for the purpose, and their report had satisfied the ASLIB Council that the Panel was of real potential value but that its organisation needed considerable improvement. Proposals to carry this improvement into effect had been circulated to all the ASLIB members and the Round-table Meeting gave an opportunity for general discussion. Various suggestions were considered, and it was unanimously agreed that the name should be changed to the ASLIB Register of Specialist Translators. The proposals for reorganisation were accepted in principle, but details were left to be worked out by the Committee.

Report of the Twelfth Annual General Meeting.

The Twelfth Annual General Meeting of members and associate members was held at 5.30 p.m. on Saturday, September 25th, 1937, at Gonville and Caius College, Cambridge.

Present : Fifty-four members and associate members were present.

Chairman : Mr. Arthur F. Ridley (Chairman of the Council of the Association) acted as Chairman of the meeting.

ITEM I. **Minutes of the Last Annual General Meeting.**

The Minutes of the Eleventh Meeting, having been printed and circulated with the last Conference Report, were taken as read. It was agreed that they should be confirmed and signed as correct by the Chairman.

ITEM II. **Audited Statement of Accounts for 1936-37.**

The Audited Statement of Accounts, which had already been circulated, was presented by the Hon. Treasurer, MR. A. F. RIDLEY, whose motion for adoption of the Accounts, seconded by MR. H. L. JACKSON, was carried unanimously.

ITEM III. **Appointment of Auditors.**

The Chairman stated that, in accordance with the request made at the previous Annual General Meeting, the Council had investigated the possibility of finding an Honorary Auditor, but had been unsuccessful. MISS D. FULLER NEARY then proposed and MR. F. HENN seconded that Messrs. West and Drake be reappointed auditors to the Association. The proposal was carried unanimously.

ITEM IV. **Election of Council.**

The Chairman announced that the list of Council and Officers had been circulated. He regretted to state that the following resignations had been received : Mr. H. Vincent Garrett, Mr. F. A. Hoare, and Professor B. W. Holman. In view of Dr. S. C. Bradford's pending resignation from the position of Keeper of the Science Library, the ASLIB Council had unanimously nominated his successor, Mr. E. Lancaster Jones.

On the proposal of MR. W. C. BERWICK SAYERS, seconded by MISS M. PEARS, the following elections and re-elections as members of the Council were unanimously approved : Mr. Theodore Besterman, Dr. S. C. Bradford, Mr. E. Carter, Miss M. E. Cleeve, Mr. J. J. Eaton, Mr. B. W. Headicar, Miss B. W. Hughes, Mr. E. Lancaster Jones, Col. L. Newcombe, and Mr. C. A. Spencer.

(The full list of members of the Council will be found on p. 4.)

ITEM V. **Election of President and other Honorary Officers.**

On the proposal of MR. THEODORE BESTERMAN, seconded by MR. ERIC SIMONS, it was unanimously agreed that Sir Harry Lindsay,

K.C.I.E., C.B.E., should be elected President of the Association and that Mr. A. F. Ridley should be re-elected Honorary Treasurer. Mr. Besterman stated that the Association had sustained a great loss through the resignation of the Honorary Secretary, Mr. F. A. Hoare, whose services had been of great value on many occasions. He was pleased, however, to propose the election of a worthy successor in the person of Mr. Edward Carter. The elections were unanimously carried.

Item VI. **Report of the Year's Work of ASLIB.**

Mr. A. F. Ridley then presented the Report of the Year's Work of the Association (see p. 13), summarising the main items, and proposing its acceptance. This was seconded by Col. L. Newcombe, and carried unanimously.

Item VII. **Resolutions.**

The Chairman stated that the following resolutions had been put forward at the close of the session on Newspaper Indexing for submission to the Annual General Meeting:

Resolution I.

That this Fourteenth Annual Conference of ASLIB, being convinced of the importance to the cause of research of the compilation of a finding-list and adequate indexes to British newspapers published up to 1800, and of such micro-photographic services as will assist these objects, unanimously endorses the Council's appeal for funds to carry out the work and urges its speedy inauguration.

The resolution was proposed by Mr. J. J. Eaton and seconded by Mr. Theodore Besterman and carried unanimously.

Resolution II.

That this Fourteenth Annual Conference, being itself convinced of the vital importance of newspapers as a main original source of recorded historical, economic, and other information, hopes that publishers of both national and local newspapers will themselves appreciate these considerations and take all possible steps to assure the permanent preservation and thorough indexing of the issues of their papers, past, present, and future, so as to facilitate the consultation of these sources of information and the Conference hereby instructs the Council to bring this resolution to the attention of the Newspaper Society and the Newspaper Proprietors Association, and invites their help in bringing it to the notice of the individual publishers.

The resolution was proposed by Professor R. S. Hutton and seconded by Dr. S. C. Bradford and carried unanimously.

Item VIII. **Location of 1938 Conference.**

The Chairman reported that ASLIB had been approached by the International Federation of Documentation Organisations, who were anxious to hold their forthcoming annual conference in England at a time and place where their proceedings could overlap those of the ASLIB Conference. The Secretary had made investigations and it appeared possible that Lady Margaret Hall, Oxford, might be available for the holding of simultaneous conferences during the third week-end in September, 1938. It was agreed to leave the matter in the hands of the ASLIB Council.

ITEM IX. **Reports from Kindred Organisations.**

Many reports from organisations of interest to ASLIB members had been received and are printed in full on page 129. Since time pressed, it was agreed not to read all these Reports *in extenso*. A report on the National Central Library was read by COL. L. NEWCOMBE, and another on the recent World Congress on Universal Documentation held in Paris, 1937, was given by DR. S. C. BRADFORD.

ITEM X. **Thanks to ASLIB Council and Staff.**

MR. EDWARD CARTER proposed a vote of thanks to those responsible for the organisation of the Conference and to the ASLIB Staff, to which the General Secretary replied.

ITEM XI. **Suggestions for Themes at Future Conferences.**

MR. ERIC SIMONS put forward the suggestions that topics of special interest to Information Officers, as distinguished from Librarians, should be given more prominence in the programmes of future Conferences. He pleaded for the inclusion of some controversial subjects and for those of special interest to the industrial section of the membership, and concluded by submitting a list of suggested specimen topics which were noted for consideration by the ASLIB Council.

ITEM XII. **Discussion of the President's Address.**

MR. B. M. HEADICAR proposed that in future the President's address should be open to discussion. The Chairman said that the matter was one for the members to decide. MR. W. C. BERWICK SAYERS was against the proposal, but stated that, if discussion were allowed, the Presidential address should give the keynote to the whole Conference proceedings. MR. BESTERMAN proposed that the matter should be left to the decision of the President, and was seconded by MR. B. C. CURLING. After some further discussion, it was decided that the present ruling should be adhered to except on those occasions when discussion of his address was expressly desired by the President.

ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30TH JUNE, 1937.

Dr.

1936 £ s. d.	EXPENDITURE.	£ s. d.	1937 £ s. d.
	To General Expenditure—		
407 13 0	Salaries	474 15 0	
80 16 9	Rent, Light and Telephone	110 15 11	
2 6 6	Insurance	2 14 2	
153 10 8	Printing, Stationery, Postage and Office Expenses	182 8 7	
3 5 11	Reference Books	2 1 6	
12 10	Travelling Expenses	7 6	
2 2 0	Press Cuttings	2 2 0	
5 5 0	Audit Fee	5 5 0	
6 7 6	Depreciation of Furniture and Fittings	7 3 6	
			787 13 2
	,, Costs of Publications—		
15 17 0	Cost of Conference Reprints and Papers		
70 8 6	ASLIB Book-List	79 5 9	
	Annuals List	10 10 0	
	Select List	27 13 0	
			117 8 9
191 7 6	Cost of 1937 Conference	185 0 10	
122 10 0	Printing of Report	84 3 0	
			269 3 10
1 12 5	(Balance)		
£1063 15 7			£1174 5 9

Cr.

1936 £ s. d.	INCOME.	£ s. d.	£ s. d.	1937 £ s. d.
	By General Receipts—			
570 3 0	Membership Subscriptions			624 6 0
	,, Sales of Publications—			
77 10 2	Book-List	93 1 0		
	Annuals-List	7 8 9		
	Select-List	40 15 2		
1 8 9	Reprints and Papers	3 5 4		
15 3 3	Directory	7 0 0		
				151 10 3
	,, Conference Receipts—			
317 9 0	Fees and other Receipts	276 2 6		
55 19 5	Sales of Report	35 17 9		
20 19 6	Advertisements in Report	15 5 6		
				327 5 9
5 2 6	,, Receipts re Translator's Panel			1 15 0
				£1104 17 0
	Excess of Expenditure over Income Carried to Balance Sheet			69 8 9
£1063 15 7				£1174 5 9

BALANCE SHEET — 30TH JUNE, 1937.

DR. | CR.

LIABILITIES.

1936						1937		
£	s.	d.		£	s.	d.	£	s.	d.
24	5	0	To Sundry Creditors				37	11	8
30	9	0	„ Subscriptions in Advance				145	19	0
			„ Working Capital—						
			As at 30th June, 1936	86	15	11			
86	15	11	*Less* excess of Expenditure over Income for the year	69	8	9			
							17	7	2
£141	9	11					£200	17	10

ASSETS.

1936							1937		
£	s.	d.		£	s.	d.	£	s.	d.
33	2	3	By Cash at Bank on Current Account				100	11	3
6	17	3	„ Cash in Hand				18	3	
							101	9	6
25	7	8	„ Sundry Debtors				34	17	1
18	15	0	„ Rent Paid in Advance						
			„ Furniture and Fittings—						
			As at June 30th, 1936	57	7	9			
			Additions during the year	14	7	0			
				71	14	9			
57	7	9	*Less* depreciation at 10 per cent. p.a.	7	3	6			
							64	11	3
£141	9	11					£200	17	10

(Signed) Arthur F. Ridley, *Hon. Treasurer.*

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the Association's affairs, according to the best of our information and the explanations given to us and as shown by the Books of the Association.

9th *July*, 1937.
8, New Court, Lincoln's Inn, W.C.2.

(Signed) West and Drake, *Chartered Accountants.*

Reports

Following the Annual General Meeting reports were received from the following organisations whose work is connected with and of special interest to members of ASLIB.

THE NATIONAL CENTRAL LIBRARY.

Report from Colonel L. Newcombe.—The past year has seen the completion of the main stage in the development of the national system of library co-operation in England and Wales. The South-western Regional Library Bureau has been established at the Bristol Public Library, with a result that the whole country is now covered by eight Regional Systems and the inter-lending system of the London Borough Libraries. Steps are being taken for the establishment of a similar system in Scotland.

The total number of books lent between libraries in the British Isles has increased by 7,496 to 125,784—a figure which is remarkable when it is remembered that ten years ago such co-operation was almost unknown. Most of this lending is based on the National Central Library, and much of it is conducted actually through that Library. The 454 libraries actively taking part in the Regional Systems lent 37,775 books to libraries in their own areas, and 5,502 to libraries outside their areas through the National Central Library.

The total number of books on which the National Central Library can now draw is nearly twenty-one million. This vast collection is steadily being made more available by the development of the various union catalogues. The combined catalogue of the Regional Library Systems at the National Central Library has increased from 547,000 entries to 660,000. The union catalogue of special outlier libraries has only about 170,000 entries, although the 166 outlier libraries contain over six and a half million books. This catalogue is, naturally, of special interest to members of ASLIB, and they, together with the National Central Library, are anxious to see it developed. It is built up by the contributions of thirty-five of the outlier libraries for additions to their stocks, and of cards made at the National Central Library for all books traced in outlier or other libraries. Until special funds are available this work cannot be accelerated, but the National Central Library is most anxious to develop this very important catalogue of books in the special libraries. There are now 2,275,000 entries in all the union catalogues at the National Central Library, and this, with the 574,000 entries in Wales, makes a grand total of 2,849,000, an increase of 259,000 on last year. The *Union Catalogue of Periodical Publications in the University Libraries of the British Isles* has now been published. It contains the locations of 23,115 different periodicals in 113 university and college libraries. It includes no entry which appears in the *World List of Scientific Periodicals*, and is therefore largely humanistic in scope. But it does include a surprisingly large number of scientific periodicals which are not in the *World List*, especially those which ceased publication before 1900 or began after 1933 as these are excluded from the *World List*.

The number of university libraries using the National Central Library shows a marked increased from fifty-three to sixty-three. The number of books supplied has risen from 2,506 to 2,956. The university libraries have also borrowed many books within their Regional Library Systems; and, through the National Central Library and within their Regional Systems, they have lent 3,499 books as against 2,933 last year.

The relations with foreign libraries are also steadily developing. In the previous year British libraries lent 302 books through the National Central Library to libraries in fifteen foreign countries and borrowed 104 books from ten countries. This year British libraries lent 357 books to thirteen countries and borrowed 145 books from nineteen countries. These figures are rightly small, as the National Central Library only applies abroad at the special request of the enquiring library, and then only after it has made reasonably sure that the wanted book is not available in this country. With regard to these international loans, it is instructive to note that the service is always best from those countries which have well-organised national systems of inter-library lending, including a national union catalogue and information bureau. This is particularly noticeable with Germany, which is well equipped in these ways and which always gives an excellent service, last year lending no less than ninety-four out of the ninety-six books for which it was asked.

The full development of the work of the National Central Library, and, indeed, of the whole system of library co-operation, is seriously hampered by the inadequacy of the annual grant from the Treasury. Not only does this sum of £5,000 compare most unfavourably with the assistance given to the national lending service in many other countries, but even the continuance of the grant is subject to a most unreasonable condition that the Trustees of the Library must collect an additional sum of £2,000 in the form of annual subscriptions from libraries. This is a task with which the Trustees of the Library are now dealing, and it is hoped that the authorities of many special and other libraries will be willing to assist the Library at a difficult if not, indeed, a critical period in its history.

BRITISH SOCIETY FOR INTERNATIONAL BIBLIOGRAPHY.

Report from Mr. E. Lancaster Jones. During the past year the Society has continued to enjoy increased membership and activity.

The Ninth Annual General and Ordinary Meetings took place on March 19th, 1937, and a record number of members and visitors attended to hear a very interesting demonstration of the Recordak micro-photographic apparatus, given by Mr. Stuart-Smith, representing Messrs. Kodak, Ltd., who kindly lent the apparatus, with two projectors, for the occasion.

The officers of the Society remain unchanged, but Messrs. Astbury and Dreaper have been elected to the Council, from which Professor Philip has resigned.

The Society has taken its customary active participation in the work of the I.I.D., and is glad to record that the labours of that Institute are becoming recognised and appreciated to an increasing extent each year.

The publication of vol. I., fasc. 1, "Auxiliary Tables," of the English edition of the Universal Decimal Classification has taken place during the year. It is confidently anticipated that the ensuing year will see the publication of the important volume II, class 5, "Pure Science."

Adhesions to the use of the U.D.C. in reference and abstract journals continues to increase, notable adherents during the year comprising the *Aluminium Spezialkartei* issued by the Rheinmetall-Borsig Mitteilungen, Berlin, the very important new German abstracting periodical, *Elektrotechnische Berichte,* and the *Kodak Bulletin* of current photographic information issued by the Kodak Research Laboratories.

THE INTERNATIONAL COMMITTEE OF UNIVERSAL CLASSIFICATION.

Summary of a report by F. Donker Duyvis.

General Activities. Thirty-five P.E. notes (Proposals of Extension of Modification of the U.D.C.) appeared in 1936, and about 4,500 new subdivisions were submitted for approval.

Sixty-three supplementary leaves of the *Supplementa et Correctiones Classificatio Decimalis* were issued and distributed.

Third Complete Edition. The third fascicule of the complete German edition, comprising Section 5, Pure Science, appeared at the end of 1936, and Dr. Frank is to be congratulated on this achievement. All the sections of 5 have been extended or modified by various experts.

Special sections that have been revised are Electric Heating by an International Committee on this subject; the Automotive and Aeronautical Sections by the Engineering Societies' Library and the Royal Dutch Air Service. The Chemical Engineering Section has been radically altered, 665 is now limited to fats and oils, the Gas Section being transferred to 662.7 and the Preparation of pure hydrocarbons to 661.7.

Attention should be drawn to the fact that the Section 93/99, History, has now been made almost to completely concord with the American D.C. edition.

Concordance between the American (D.C.) Edition and the International (U.D.C.) Edition. A new D.C. committee has been appointed by the Lake Placid Club Education Foundation Trustees, the body responsible for the American D.C. edition. The committee is composed of a number of expert bibliographers and librarians.

Dr. Godfrey Dewey paid a visit to Europe and discussed the concordance between the American and European editions, and made a very clear and objective report to the Lake Placid Club Education Foundation Trustees on this subject, the concluding portion of which is as follows:

"To establish and maintain concordance will take time and effort and some money. I believe, however, that it will take, in the long run, less time and effort, and certainly less money, than the eventual consequences of disconcordance, and that the advantages far outweigh the disadvantages to all users, both in the United States and thruout the world, which in the light of this statement scarcely need further elaboration, there is at least one advantage of immediate practical importance to the Education Foundation and to the new D.C. Committee.

If the C.D. can be brought into substantial concordance with the D.C., it becomes possible to depend on the English language translation of the C.D. to serve the purposes of the specialist and the special library, as well as those of international bibliography and abstracting; thus permitting the D.C. to concentrate much more effectively on supplying the distinctive needs of the American library field. The present effort of the D.C. to serve all fields by rapidly increasing expansions to the specialist's level is making it increasingly unsuitable as a working tool of the average American library. I believe that there is a legitimate and large demand for a well-balanst library edition, of 1,000 to 1,200 pages. With concordance established and maintained, the way is open for the D.C. to concentrate on this primary field, without assuming the immense burden of publishing what is virtually a handicapt attempt at a bibliographic edition.

Without concordance, it is quite possible that D.C. and C.D. alike contain within themselves the seeds of their own destruction.

Concretely, my recommendation is that the new D.C. Committee should make it an integral part of its first task to establish and maintain an effective liaison with the C.D., looking toward immediate co-operation and eventual concordance. One result of such a policy should be to establish a more effective basis than ever before for seeking the substantial endowment which the Decimal Classification as a whole so greatly needs and so richly deserves."

The recommendations of Mr. Dewey apply as well to the U.D.C. users and editors as to our American colleagues.

The International Committee for Universal Classification has kept strictly to the agreement that the U.D.C. should not introduce new numbers which clash with existing D.C. numbers.

However, all U.D.C. collaborators should realise that it is not sufficient to keep loyally to that agreement but that on the European side we ought to do more than that. Not only should clashing be avoided but identical classification-numbers should be aimed at.

The strength of U.D.C. is that it is the most exhaustive and complete classification available at this moment and that it is in constant dynamic development by the continuous collaboration of hundreds of experts of various nations. The weakness of the classification is the fact that it is based on a compromise of various national and special points of view. This is the weakness of any standardised tool, and this weak point can only be accepted if the tool is really a standardised one and is not presented in various deviating versions.

Therefore I might stress again that we should give all our strength to promoting concordance and make sacrifices to that end. I am well aware that there are cases in which there may be serious theoretical and practical objections, but many of those objections are not so serious that they might not be overcome. In those cases where the U.D.C. scheme is far more modern and apt for practical use, we may be sure that our American friends will be wise enough to take the U.D.C. version, just as the U.D.C. has taken the American version in various cases in which the latter one appeared to be superior.

I might still stress one further point.

From certain quarters it has been suggested that the U.D.C. Committee should make a contract with our American colleagues so that for every change made in the U.D.C. to conform to the D.C. there should be a change in the D.C. to conform to the U.D.C.

To those suggestions I might answer that intellectual co-operation is not a matter of bargaining. In the interest of international standardisation we should do our best to promote concordance, without considering how fast our U.S.A. colleagues are working. We may have full confidence that our American friends do the best they can in the given circumstances and will keep in mind the observation of Godfrey Dewey that without concordance the D.C. and U.D.C. alike contain within themselves the seeds of their own destruction. I am glad to state that the third edition shows many new steps to concordance. The classification of Psychology, of Labour Economics, of Political Science, of Junior Social Movements, of Botanical Geology

have been brought into practical concordance. In various other places minor clashes between numbers in the two editions also have been cut out.

French Abridged Edition. Mr. Sustrac has finished the first draft of the new abridged edition, which will contain some 4,000 sub-divisions. As long as this edition is not available I might recommend the "Classification for works on pure and applied science in the Science Museum Library," this edition being the most up-to-date at present available.

Fifth Complete Edition. As soon as the French Abridged Edition is published, work will be begun on the Fifth Complete Edition in the French language. This edition will be published in fascicule form, so that it will be possible to obtain special parts of the classification which may be used together with the abridged edition for specialist purposes.

Aluminium Edition. The Aluminium Science Edition which was announced in my previous report has now been published in the same excellent way as all the U.D.C. editions supervised by our German friends.

REPORT ON THE UNION FRANÇAISE DES ORGANISMES DE DOCUMENTATION FOR THE YEAR 1936–7.

The fifth year of the work of the U.F.O.D. has been dominated by the Exposition Internationale des Arts et Technique dans la Vie Moderne, and by the Congrès Mondial de la Documentation Universelle. The share which U.F.O.D. felt compelled to take in these two great manifestations of intellectual rapprochement has, in fact, necessitated very long preliminary surveys and most careful execution.

The Exhibition. The form in which documentation should be presented was the subject of several discussions.

The accepted scheme demonstrated, by means of photographs, the full cycle of documentary forms which extend from the author to the user. Five examples were chosen from different schemes in order to show convincingly that documentation, as much as the principle of organisation, is applicable to all spheres of intellectual work.

The World Conference of Universal Documentation. The Exhibition is the setting for numerous international Conferences in which intellectual centres of all countries and of all schools of thought have affirmed their willingness to collaborate. Documentation could not be omitted and U.F.O.D. did not hesitate to adopt the suggestion put to it by the Exhibition that as large a Conference as possible should be held at Paris from the 16th to the 21st of August, 1937. Documentation has so far evolved during recent years that the moment seemed ripe to invite an exchange of views between all groups whose activities have dealt with the production, classification, preservation, and dissemination of all types of documents.

In order to ensure that each group participating in these discussions should retain its entire liberty of action and of decision, it was decided to place this Conference under the auspices of an International Committee of Documentation comprising representatives chosen in the interested areas. Great Britain was represented by Sir Henry Lyons, General Secretary of the International Council of Scientific Unions, and by Mr. H. G. Wells.

This Conference was well attended. Thirty-one Governments were officially represented as well as forty international organisations; 326 delegates coming from forty-five countries were registered. About a hundred papers were discussed. Amongst the numerous and important resolutions passed by the Conference we would single out in particular the following general declaration, summarising the conclusions reached:

In order to meet modern exigencies, the organisation concerned with the disposal of documentary material must face a new orientation appropriate to this need for rapid and complete information.

These organisations have understood the need of bringing into harmony, in accordance with common rules, the various phases of the documentation cycle in the interest of the users.

This cycle comprises, on the one hand, the production, grouping and conservation of documents and, on the other, the elaboration, diffusion, and utilisation of documentation.

Documentation comprises all categories of documents: manuscripts, books, reviews, newspapers, leaflets, engravings, photographs, films, discs, pieces belonging

to collections and museums, used in artistic, literary, scientific, technical, economic, and social life.

The Congress is of the opinion that a liaison between all the activities interested in documentary work should be established in accordance with the four following plans so as to achieve an international network of documentation :

Plan by country, maintaining, within each nation, a co-ordination of existing organisations of documentation ;

Plan by discipline, maintaining co-operation between the organisations which embrace each branch of knowledge ;

Plan by form, uniting the organisations which produce the same documentary instrument ;

Plan by profession, grouping all the bodies whose activities are concerned with documentation.

This liaison should be maintained by an international organisation, comprising a federation, congresses, and limited conferences.

The World Congress of Universal Documentation, to mark its loyalty to the spirit and ideas which have been present at its sittings, resolves to keep in activity its International Committee, which will have the task of watching over the execution of the following resolutions, until the Federation comes into action.

Other Activities. It is obvious that these two great undertakings—the Exhibition and the Conference—have absorbed the greater part of the activities of U.F.O.D. Nevertheless, it has not entirely abandoned the normal course of its work and has devoted, as in previous years, several of its meetings to the study of documentary methods and organisations. For it is one of the principal aims of U.F.O.D. to give its members the opportunity to keep abreast of all interesting developments and new tendencies coming within the scope of its work.

(*See also* the report by Dr. Bradford.)

THE WORLD CONGRESS ON UNIVERSAL DOCUMENTATION, PARIS, 1937.

Summary of report from Dr. S. C. Bradford, Science Library, South Kensington. The World Congress on Universal Documentation was held in Paris during the week beginning the 16th August and was attended by delegates from forty different countries : it was certainly the most representative Bibliographical Conference that has been held so far. In all, some ninety-one papers were contributed, covering bibliography in every aspect. These are obtainable from the Secretariat, 28 bis, rue Saint Dominique, Paris, VIIe, at 80 francs, plus postage 7 francs.

The British delegates comprised Professor E. N. da C. Andrade (Royal Society), Dr. S. C. Bradford (Science Museum, Royal Meteorological Society, British Society for International Bibliography, ASLIB), W. L. Davies (National Library of Wales), Dr. E. S. Hedges and Dr. C. E. Homer (International Tin Research and Development Council), Professor R. S. Hutton (ASLIB), H. Jenkinson (Public Record Office), E. Lancaster Jones (British Society for International Bibliography, Science Museum), B. S. Page (National Library of Ireland), Miss E. W. Parker (Mond Nickel Company), Miss M. Shaw, Miss L. G. Thomerson, and Mr. H. G. Wells (Comité International de la Documentation).

The progress of the Congress was, however, not smooth sailing. As a natural result of the growing appreciation of the necessity for the co-ordination of bibliography, there are some who are dissatisfied with the slow advance which has been possible in the first stages. Convinced of the fundamental importance of the subject and inspired with the need for action, they would like to establish a new international organisation, which should evolve a new classification, and forthwith proceed to co-ordinate the whole bibliographical output, and that without any serious criticisms to make of the methods and work of the International Institute of Documentation. Each group of papers contained one or more resolutions designed to establish the organising committee of the congress, entitled " Comité international de la Documentation," as a new permanent international controlling body. The discussion of these resolutions occupied almost the whole time of the Congress, so that the energy of the Congress was devoted to the consideration of the general questions of improving the international organisation of bibliography and of co-ordinating the work of the multifarious autonomous national and specialist bodies, with a view to the evolution of the most economic and complete information service.

The resolutions elicited a powerful demonstration of support for the Universal

Decimal Classification and the International Institute of Documentation. The Institute was recognised unanimously as the only international authority in matters of documentation. In order to make its representative character more evident in its name, this was changed to " International Federation of Documentation Organisations," with " International Institute of Documentation " as a sub-title to indicate its work in studying the theory of classification and the methods of documentation and in organising the co-ordination of bibliographical activities.

The organising committee of the Congress was incorporated in the Federation for the purpose of calling periodical open Congresses of the widest scope. Between these the Federation will continue to hold its Conferences as in former years.

The resolutions finally adopted by the Congress are comprised in a pamphlet of some fourteen large quarto pages. They include a number of recommendations concerning matters of detail such as the legal depositors of printed books, the standardisation in form of catalogue entries in National Catalogues, the issue of printed catalogue titles in card form by National Libraries, and the supply of micro-film copies of books, newspapers, and pamphlets. (The most important declarations adopted are given in the U.F.O.D. Report above.)

It remains to add that the change of name was made at a meeting of the Council of the I.I.D. held immediately following the closing session of the Congress.

It was decided that the next Conference should be held at Oxford in 1938 in the third week of September.

(*See also* the U.F.O.D. Report above.)

DEUTSCHER NORMENAUSSCHUSS.

Report from Dr. Frank. The " Normenausschuss " is the centre of all work in the field of standardisation in Germany, which also includes the standardisation of documentation.

A special Committee has been created for this purpose, i.e. the Committee of Standardisation dealing with Libraries, Books and Periodicals. The work of this Committee covers standardisation in connection with documentation, co-operation with the publishers of bibliographies and of bibliographical periodicals, co-ordination between information centres, classification, etc.

This Committee is responsible for more than the mere study and achievement of standardisation in documentation. Abroad it is the official representative of the group of German Institutions interested in documentation problems. The Committee has undertaken several publications.

A complete edition (the third) of the Universal Decimal Classification in German is in preparation. Three fascicules of this edition have appeared. In addition, four different publications with extracts from this classification have been published by the Normenausschuss.

A guide to the documentation of pure and applied science is also being prepared. This is being carried out in co-operation with the Reichsgemeinschaft der Technisch Wissenschaftlichen Arbeit.

In connection with the above, the compilation as well as the publication of bibliographies relating to special fields will be undertaken. The Committee of standardisation also undertakes to lay down rules for the compilation and the form of references, and to guide the co-ordination and organisation of documentation centres.

In short, the Normensauschuss tries to be the centre for all questions relative to documentation which arise in libraries, publishing firms, documentation centres, as well as those arising in connection with bibliographies, periodicals, etc.

THE " BIBLIOTHEKSAUSSCHUSS " OF THE PRUSSIAN STATE LIBRARY, THE GERMAN-FOREIGN BOOK EXCHANGE, AND THE REICH EXCHANGE DEPARTMENT OF THE REICH AND PRUSSIAN MINISTRY OF SCIENCE, PEDAGOGY AND NATIONAL EDUCATION.

Report from Fräulein Dr. von Busse. The Library Committee of the Prussian State Library (Bibliotheksausschuss bei der Preussischen Staatsbibliothek) has continued its activities during the business year 1936 in the same measure as in the preceding years. Its task consists of supplying the German scientific libraries (University libraries and the libraries of the Technische Hochschulen, of the two mining academies and of some scientific institutes) with foreign literature in excess of their own purchase grant. During the last few years this supply has been

restricted almost entirely to foreign periodicals, including, to a slight extent, also works issued in parts. Individual books had, on the other hand, to be obtained by the libraries themselves. One much-appreciated form of assistance was that granted for some years now by the Germanistic Society of New York, which, through the American publishers, enables our libraries to receive a number of important scientific periodicals at considerably reduced prices.

The German–Foreign Book Exchange (Deutsch-Ausländischer Buchtausch) has, during the year 1936, again been able to extend its exchange relations with foreign countries. About 200 new parties to the exchange arrangement were added, so that the total number is now 2,000. Apart from the periodicals regularly received here (about 2,400), valuable scientific monographs were received and became available for distribution to the German libraries.—The service of reports on new German scientific publications, which has been maintained since 1932 with the help of a considerable number of professors, has been warmly received by the foreign exchange partners and by others as well: a monthly list, compiled on cards of international dimensions and embracing 100–120 titles, is sent to more than 500 places abroad, in return for which the recipients send the German–Foreign Book Exchange their scientific publications. These selection lists from German scientific literature represent the only such form of scientific guidance for the acquisition policy of libraries to pass the experimental stage; they were recently the object of great interest at the Congrès Mondiale de la Documentation.

The Reich Exchange Department of the Reich and Prussian Ministry for Science, Pedagogy and National Education (Reichstauschstelle im Reichs- und Preussischen Ministerium für Wissenschaft, Erziehung und Volksbildung) is again able to report good results in the exchanging of duplicates. Through its good offices the libraries were supplied with:

48,713 volumes and 39,115 single parts—
of which the search service was responsible for:
6,017 years' runs (Jahrgänge) and 10,642 single parts, and a further
547 years' runs (Jahrgänge) were completed, so that in all
6,564 years' runs (Jahrgänge) could be shelved as a result of the use of search cards.

The associated libraries have reported about 20,000 fresh volumes on 11,536 cards; about 30,000 volumes were recorded on cards at the Reich Exchange Department by a number of helpers who were available for a period of two months. Further, over 100 book lists, of official or private origin, were available; these were not suitable for circulation, but were extensively applied in the selection of books for a series of specialist libraries.

NETHERLANDS INSTITUTE FOR DOCUMENTATION AND REGISTRATION.

Report by Mr. J. J. Roeloffs Valk, Director of the Institute. This Institute co-operates with the "Nederlandsch Instituut voor Efficiency" (Netherlands Management Institute).

Publications:

(i) *Repertorium Technicum,* an international bi-monthly bibliography, formerly comprising yearly about 25,000 titles of books and of articles appearing in periodicals on technical and allied subjects, has been extended up to more than 40,000 titles. Each bi-monthly issue appears in four numbers, of which the fourth contains a short alphabetical subject-index. Each bibliographical notice will, if possible, include the classification-number adopted from the Universal Decimal Classification, the name of the author, the title of the article or book, its source of publication and, between brackets, a reference to some journal in which an abstract of the publication is to be found.

(ii) *Netherlands Technical–Scientific Literature* (appearing monthly in the *Korte Mededeelingen* (Short Communications) Bulletin of the Netherlands Management Institute). Copies—if desired—available.

(iii) *Abbreviated Universal Decimal Classification in the Netherlands Language.* Appeared in March, 1935, and is still enjoying a favourable reception in scientific centres.

(iv) *Classificatio Decimalis; Supplementa et Correctiones.* Extensions and corrections of the Universal Decimal Classification as fixed by the International Committee on Decimal Classification from the period 1929–32.

(v) *I.I.D. Communicationes.* Communications of the I.I.D., appearing four times a year. This bulletin tries to be an international "forum" for the study and the exchange of opinions on documentation matter. Articles are published in the English, French, and German languages. The Council of the I.I.D. recently decided that each number, as far as possible, will be dedicated to a special subject. For the first three years the *Communicationes* were cyclo-styled and multiplied by the Rotaprint, but since the issue of the first number of 1937 this quarterly has appeared in printed form.

Free annexes: extensions and corrections of the Universal Decimal Classification as fixed by the International Committee on Decimal Classification after 1932.

(vi) *Union List of Scientific Periodicals.* A list of periodicals available in public and in principal private libraries in The Hague is still in compilation, but can be read.

It is intended to compile a similar list for the whole of the Netherlands.

(vii) *Netherlands Documentation Directory.* Printing of the Netherlands Documentation Directory (a repertorium of sources of bibliographic data) is in progress and the first issue will appear in September, 1937.

(viii) *Annual Report,* 1936 (in Dutch).

(ix) *A.B.C. Rules* (in Dutch). Rules for the alphabetical classification were published in March, 1936.

Other Activities:

(i) The "Nederlandsch Instituut voor Efficiency" published a report about the Management Research Groups in May, 1936.

(ii) *Information Service.* The Information Service concerning bibliographical data on all sorts of subjects, but especially technical ones, was extended largely during the preceding year.

TECKNISKA LITTERATURSALLSKAPET (TLS), STOCKHOLM, SWEDEN.

Summary of a report from Miss Hilda S. Lindstedt, Librarian of the Royal Technical University (Kungl. Tekniska Högskolan) in Stockholm, and First Vice-President of the "Tekniska Litteratursallskapet." (The full report can be seen at the ASLIB Office.)

The "Tekniska Litteratursallskapet" was founded in Stockholm on January 15, 1936, on which occasion Dr. A. Predeek read a paper on "Der Stand der technisch-naturwissenschaftlichen Literaturnachweises." Eligible as members are primarily qualified library officials occupied with technical literature, editors, competent research workers and authors of technical literature. Chairman: G. Borelius, Professor at Tekniska Högskolan, Stockholm; first Vice-Chairman, H. S. Lindstedt, Librarian *ibidem*; second Vice-Chairman, Folke Odqvist, Professor *ibidem*; Secretary for 1936, C. Björkbom, chief assistant, Kungl. Biblioteket, Stockholm. The address of the Society is Kungl. Tekniska Högskolans Bibliotek. The number of members is about 100.

Though the aims of the Society, according to its by-laws, are more ideal than organising, the Society, even at the start of its activity, took up the task of promoting technical documentation in Sweden. The "Tekniska Litteraturdag," held in connection with the foundation of the Society, on January 16, 1936, in Stockholm at Tekniska Högskolans Bibliotek, was arranged with the view of stimulating Swedish interest in this matter. The necessity of taking the initiative in creating a National Technical Documentation Centre was made manifest, and in a circular-letter, inviting representatives of the Swedish Industry to partake in the first discussion session arranged by the Society on March 30th, 1936, the Society Board formulated the programme of its work in four points:

1. Standardisation of the Swedish technical nomenclature;
2. The setting up of a classification scheme for technical documentation, satisfactory to the specialists as well as to the librarians;
3. The extension of the activity of technical libraries so as to include diffusion of information concerning technical documents;
4. The inventory of existing collections of all kinds of technical documents available.

Considering it possible to obtain, with the least delay and by comparatively small means, practical results in the documentation fields defined in the points 3 and 4, the Board thought it appropriate to have these problems, most vital for the technical research work, first discussed. Furthermore, the Swedish Committee for Nomenclature was founded on January 15th, 1936 (Chairman, N. Fredriksson, formerly Member of the R. Board of Education ; Secretary later on, Dr. H. Reutercrona), on which were asked to act one representative of each of the following organisations : the Swedish Institute for Engineering Research (Ingeniorsventenskapsakademien), the Royal Patent Office, the Swedish Association of Engineers and Architects (Svenska Teknologforeningen), the Standardisation Commission of Sweden (SIS, Sveriges Standardiseringskommission), and the Swedish Association of Inventors (Svenska Uppfinnarforeningen). At a session held on February 4th, 1937, the Committee was constituted the Superintending Centre for the adaptation of uniform principles in the field of nomenclature, whilst its activity should be prosecuted by specialised secondary committees (study committees), to be created when necessary. The Committee should be the nucleus of the Executive Committee, and should form, with the study committees, a Central Council.

At the discussion held on March 30th, 1936, by TLS, attention was called to the fact that the final object of the standardisation of the Swedish technical nomenclature should be the Swedish technical vocabulary with the corresponding terms in English, French, and German. At the Committee's meeting, March, 1937, the preparation of a translation into Swedish of the U.D.C. was suggested. Finally the Standardisation Committee of Sweden (SIS), at a discussion arranged for consideration of these problems, nominated a Sub-Commission to be charged with the preparation of a classification adapted to the special needs of the work of the Commission itself. It was proposed that the subclasses of this classification should harmonise with those of the U.D.C.

Thus the most appropriate organisations having taken charge of the problems given in the points 1 and 2 of the TLS working programme, the TLS Board has devoted itself to the promotion in Sweden of the technical documentation and of the establishing of the basis necessary for the documentary work : the depots of technical documents.

The effective co-operation between the scientific and practical work ought always to be supported by a Centre of Documentation. The aims of the TLS, as given in its above programme for its work, certainly are of the greatest importance to the industrial life of Sweden. The success of the Society's endeavours in regard to the distribution of technical documentation depends, however, most decidedly on the extent to which the resources of the Library of the Technical University (Tekniska Högskolans Bibliotek) in Stockholm may be utilised, and first of all, the Society would have to contribute to the augmenting of the Library's staff.

The TLS Board, with the financial support of a big Swedish industrial enterprise, has already undertaken preliminary investigations for the realisation of the establishing of the proposed Centre of documentation in connection with the Library of the R. Technical University, but definite results are not as yet to be reported.

Up to this moment six numbers of the TLS Reprint-series have been published. A more detailed report relating to the technical documentation activities in Sweden up to April, 1937, has been printed in the " Rapports " of the World Congress for Universal Documentation, Paris, 1937.

Index.

NOTE.—This is not a complete subject index to the contents of the papers, but only to the names of speakers and the titles of papers, etc. Copies of the thirteen previous Reports can be obtained from the office of the Association.

PAGE

Abstracting and Indexing Periodicals, extent to which Scientific and Technical Literature is covered by the present . . . 59

ASLIB :

- Annual Accounts 127
- Annual General Meeting 124
- ASLIB and Classification 16
- *Book List* 14
- *Bulletin* 16
- *Classified List of Annuals and Year Books* 14
- Council and Committees 13
- Directory 16
- Enquiry Bureau 15
- Finance and Membership 14
- Information contained in early Newspapers 16
- London and Home Counties Branch of ASLIB . . . 17
- Panel of Expert Translators 15
- Report on Year's Work 13
- *Select List of Standard British Scientific and Technical Books* . . 15

Bibliotheksausschuss of the Prussian State Library, etc. . . . 134
Books and Documents, Preservation and Restoration of . . . 108
Bradford, Dr. S. C. 59, 133
Bridge, Lieut.-Colonel C. 112
British Council, The Work of 112
British Society for International Bibliography 130

Crowther, J. G. 57
Crutchley, Lieut.-Colonel E. T. 72

Davis, Watson 100
Deutsches Normenausschuss 134

Eaton, J. J. 42
Exhibition of Microphotographic Equipment 107
Extent to which Scientific and Technical Literature is covered by the Present Abstracting and Indexing Periodicals 59

Final Session and Round Table Meeting 123

Headicar, B. M. 108
Hodgson, Edward S. 91
Holmstrom, Dr. J. E. 83
Hutton, Professor R. S. 96

International Committee of Universal Classification . . . 130
Inter-relation between Science, Agriculture and Industry . . 18

Lewenz, H. I. 95
Librarian of *The Times* 39
Lindsay, Sir Harry 18, 80

Macnab, W. 67
Microphotographic Equipment, Exhibition of 107

PAGE
Microphotographic Processes in Documentation, Introductory Note 96
Microphotographic Processes in Documentation, Uses of . . 100

National Central Library 129
Nederlandsch Instituut voor Documentatie en Registratuur . . 135
Newspaper Indexing 42
Newspaper Indexing in the United States 31
Notes on Newspaper Indexing 39
Notes on the Storage of Pamphlets and on the Preservation and Restoration of Books and Documents 108

Orwin, C. S. 12

Pamphlets, Storage of 108
Pearce, J. G. 91
Public Relations Officer 72

Ridley, A. F. 12, 48, 123, 124

Sayce, Leonard A. 104
Science, Agriculture and Industry, Inter-relation between . . 18
Scientific and Technical Research in the U.S.S.R. 49
Spens, W. 121
Stanley, John F. 93
Stuart-Smith, K. 105
Symposium on Newspaper Indexing 31

Taylor, Captain A. C. 47
Technical Translating 83
Technical Translations, Draft Rules for 94
Tekniska Litteratursallskapet, Sweden 136
Turin, Dr. S. P. 49

Union Française des Organismes de Documentation . . . 132
Uses of Microphotographic Processes in Documentation . . 100
U.S.S.R., Scientific and Technical Research in the 49

Walker, Miss Marie-Anne E. 31
Work of the British Council 112
World Congress on Universal Documentation 133

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